



## SEQUENCE LISTING

<110> Davydova, Elena K.  
Rothman-Denes, Lucia B.  
Dahl, Gary A.  
Gerdes, Svetlana Y.  
Jendrisak, Jerome J.

<120> Preparation and Use of Single-Stranded Transcription Substrates  
for Synthesis of Transcription Products Corresponding to Target  
Sequences

<130> EPICEN-09584

<140> 10/719,372

<141> 2003-11-21

<160> 41

<170> PatentIn version 3.3

<210> 1

<211> 10506

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 1

atgtcagtat ttgatagact ggctgggttc gcagacagcg taaccaatgc aaagcaagtt	60
gacgtctcta ctgcaaccgc ccagaagaaa gctgaacaag gtgtcactac tcctcttggt	120
tctcctgatg ctgcttatca aatgcaagct gcccgtagtg gtaatgttgg ggctaattgca	180
tttgaaccag ggacagtgc atcagatttc atgaatctga cccaatgca aatcatgaat	240
aagtatgggg ttgagcaagg cttacaactt atcaatgctc gtgctgatgc aggaaccag	300
gtattcaatg attcagttac tacaagaact cctggggaag aactggggga tattgctact	360
gggtgtggcc ttggttttgt taataccctt gggggcattg gtgctcttgg ggcaggctta	420
ctcaacgatg atgcaggtgc tgttggtgct caacaattga gtaagtttaa tgatgctggt	480
catgctaccc aaagccaggc attacaagat aaacgtaagc tctttgctgc tcgtaactta	540
atgaatgaag tagagagtga acgtcagtat caaacagata agaaagaagg cactaatgac	600
atagtagctt ccttatctaa atttgagcgt gattttgtag gttcaattga gaatgctgct	660
caaactgact ctattatttc tgatgggtta gcagaagggg taggttctct attaggtgct	720
ggctcctgat taaggggtgc atctttactg ggtaaagcag ttgttcagc aaatactctt	780
cgtagtgctg cattggctgg tgctattgat gcaggtactg gtactcagtc actggctcgt	840

attgcctcta ctgtaggtag agctgcaccg ggtatggttg gtggtggtgc aatggaagct	900
ggtggtgcat accaacaacac tgctgatgaa attatgaaga tgagtcttaa agacttagag	960
aagtctcctg tttatcagca acatattaaa gatggatgtg cccctgaaca ggctcgtcgt	1020
cagactgcat ctgaaactgg tcttactgct gctgctattc aattacctat tgctgctgca	1080
accggctctc tggatatccg ttttgagatg gctcctttcc gtgctggctc tttaggtgct	1140
gtaggtatga accttgcccg tgaaacagtg gaagaagggtg ttcagggtgc tacaggccaa	1200
ctggctcaga atattgcaca gcaacaaaac attgataaga accaagacct gcttaaagggt	1260
gtcggtagac aggctgggtt aggtgctctt tatggctttg gttctgctgg tgttgtagac	1320
gctccggctg gtgctgctg ttttagcagg gctgcaactg ctctgtatt gcgtaccaca	1380
atggctgggtg ttaaagctgc tggtagtgta gcaggtaagg ttgtttctcc tattaagaat	1440
actttagtag ctgctgggtg acgggttatg aagcagaatg aagaagcatc tcctgttgct	1500
gatgactatg ttgcacaggc agcacaagaa gctatggctc aagcaccaga agcagaagtt	1560
actattcgtg atgctgttga agcaactgat gctactccag aacagaaagt tgcagcacac	1620
cagtatgttt ctgacttaat gaatgctact cgttttaatc ctgaaaatta tcaggaagca	1680
ccagagcata ttcgtaatgc tgtagctggg tctactgacc aagtacagggt tattcagaag	1740
ttagcagact tagttaacac attagatgaa tctaactctc aagcactgat ggaagctgca	1800
tcttatatgt atgatgctgt ttcagagttt gagcagttca ttaaccgtga cctgctgca	1860
ctggatagca ttcctaaaga ttctccggct attgagttac tcaaccgtta tacgaatctg	1920
acagctaata ttcagaacac accaaaagta attgggtgcac tgaatgttat taatcgaatg	1980
attaatgaat ctgctcagaa tggttctttg aatgtgactg aagaatccag tccacaggaa	2040
atgcagaacg tagcattagc tgctgaagta gccctgaaa agctcaatcc agagtctgta	2100
aatgttggtc ttaaacaatg tgctgatggg cgtattaaac tgaataatcg ccagattgct	2160
gccctccaga atgctgctgc aatcctgaag ggggcacggg aatatgatgc agaagctgcc	2220
cgtcttggtg tacgtctca agacattgtg agtaaacaga ttaaaacgga tgagagcaga	2280
actcaggaag gacaatactc tgcgttgcaa catgcgaata ggattcgggtc tgcgtataac	2340
tctggtaatt tcgagttggc ctccgcttac ctgaacgact ttatgcagtt cgcacagcac	2400
atgcagaata aggttgaggc gttgaatgag catcttggtt cggggaatgc ggataagaat	2460
aagtctgtcc actaccaagc tcttactgct gacagagaat ggggtcgtag ccgtaccgga	2520
ttgggggtca atccctatga cactaagtcg gttaaatttg ccagcaagt tgctcttgaa	2580

gcgaaaacgg tagcggatat tgctaatagcc ctcgcttcgg cttacccgga actgaaggtc	2640
agtcataataa aagttactcc attggattca cgtcttaacg ctccctgctgc tgagggtggtc	2700
aaggcattcc gtcaaggcaa tcgagacggt gcttcttctc aaccgaaagc tgactccgtg	2760
aatcagggtta aagaaactcc tgttacaaaa caggaaccag ttacatctac tgtacagact	2820
aagactcctg ttagtgaatc tgttaaaaca gaacctacta ctaaagagtc tagcccacag	2880
gctataaaaag aacctgtgaa ccagtctgaa aaacaggatg ttaaccttac taatgaggac	2940
aacatcaagc aacctactga atctgttaaa gaaactgaaa cttctacaaa agaaagtaca	3000
gttacagaag aattaaaga aggtattgat gctgtttacc cttcattggg aggtactgct	3060
gattctaaag cagagggtat taagaactat ttcaaattgt cctttacctt accagaagaa	3120
cagaaatccc gtactgttgg ttcagaagca cctctaaaag atgtagccca agctctgtct	3180
tctcgtgctc gttatgaact ctttactgag aaagaaactg ctaaccctgc ttttaatggg	3240
gaagttatta agcgatacaa agaactcatg gaacatgggg aaggatttgc tgatattctt	3300
cgtccccgtc tggctaagtt ccttaacact aaggatgttg gtaaacgttt tgctcaagg	3360
acagaagcca accgttgggt aggtggtaag ttacttaaca ttgttgagca ggatggggat	3420
acctttaagt acaacgaaca attgctacag actgctgtat tagcaggctt tcaatggaga	3480
cttactgcta ccagcaatac tgctatcaaa gatgcaaaag atgttgctgc tattactggg	3540
attgaccaag ctctgctgcc agaagggtta gtagagcaat ttgatactgg tatgacactc	3600
actgaagcag ttagttccct ggctcagaaa attgagtctt actggggatt atctcgtaat	3660
ccaaatgctc cattgggcta taccaaaggc atccctacag caatggctgc tgaaattctg	3720
gctgcatttg tagagtctac tgatgttgta gagaacatcg tggatatgtc agaaattgac	3780
ccagataaca agaagactat tggctctgtac accattactg aactggattc cttcgaccca	3840
attaatagct tccctactgc tattgaagaa gctgttttag tgaatcctac agagaagatg	3900
ttctttgggtg atgacattcc tcctgtagct aatactcagc ttcgtaacct tgctgttcgt	3960
aatactccag aacagaaggc tgcattgaaa gcagagcagg ctacagagtt ctatgtacac	4020
acccaatgg ttcaattcta tgagacgtta ggtaaagacc gtattctcga actgatgggt	4080
gctggtagtc tgaataaaga gttacttaat gataaccatg ctaaactctt ggaaggtaag	4140
aaccgttcag tagaggactc ttacaaccaa ctgttctccg tcattgagca ggtaagagca	4200
cagagcgaag acatctctac tgtacctatt cactatgcat acaatatgac ccgtgttggg	4260
cgtatgcaga tgttaggtaa atacaatcct caatcagcca aactgggttcg tgaggccatc	4320

ttacctacta	aagctacttt	ggatttatcg	aaccagaaca	atgaagactt	ctctgcattc	4380
cagttaggtc	tggctcaggc	attggacatt	aaagtcata	ctatgactcg	tgaggttatg	4440
tctgacgagt	tgactaaatt	actggaaggt	aatctgaaac	cagccattga	tatgatgggt	4500
gagtttaata	ccactgggtc	cttaccagaa	aacgcagttg	atgttctgaa	tacagcatta	4560
ggagatagga	agtcattcgt	agcattgatg	gctcttatgg	agtattcccg	ttacttagta	4620
gcagaggata	aatctgcatt	tgtaactcca	ctgtatgtag	aagcagatgg	tgttactaat	4680
ggccaatca	atgccatgat	gctaatagaca	ggcgggtctgt	ttactcctga	ctggattcgt	4740
aatattgcca	aaggggggctt	gttcattggg	tctccaaata	agaccatgaa	tgagcatcgc	4800
tctactgctg	acaataatga	tttatatcaa	gcattccacta	atgctttgat	ggaatcgttg	4860
ggtaagttac	gtagtaacta	tgccctcta	atgcctattc	agtctcagat	agacagtctt	4920
ctttctctga	tggatttggt	tttaccggat	attaatcttg	gtgagaatgg	tgctttagaa	4980
cttaaacgtg	gtattgctaa	gaacccactg	actattacca	tctatgggtc	tggtgctcgt	5040
ggatttgcag	gtaagctggg	tagttctggt	actgatgcca	tctatgagcg	tatgtctgat	5100
gtactgaaag	ctcgtgctaa	agacccaaat	atctctgctg	ctatggcaat	gtttggtaag	5160
caagctgctt	cagaagcaca	tgctgaagaa	cttcttgccc	gtttcctgaa	agatatggaa	5220
acactgactt	ctactgttcc	tggttaaactg	aaagggtgtac	tggaactaca	atccacagggt	5280
acaggagcca	aaggaaaaat	caatcctaag	acctatacca	ttaagggcga	gcaactgaag	5340
gcacttcagg	aaaatatgct	gcacttcttt	gtagaaccac	tacgtaatgg	tattactcag	5400
actgtaggtg	aaagtctggg	gtactctact	gaacaattac	agaaagctac	tcagattcaa	5460
tctgtagtgc	tggaagatat	gttcaaacag	cgagtacaag	agaagctggc	agagaaggct	5520
aaagacccaa	catggaagaa	aggtgatctt	cttactcaga	aagaactgaa	tgatattcag	5580
gcttctctga	ataacttagc	ccctatgatt	gagactgggt	ctcagacttt	ctacattgct	5640
ggttcagaaa	atgcagaagt	agcaaatcag	gtattagcta	ctaaccctga	tgaccgtatg	5700
cgtgtaccaa	tgagtatcta	tgctccagca	caggccgggtg	tagcagggtat	tccatttatg	5760
actattggta	ctgggtgatg	catgatgatg	caaactcttt	ccactatgaa	aggtgcacca	5820
aagaataccc	tcaaaatctt	tgatgggtatg	aacattgggt	tgaatgacat	cactgatgcc	5880
agtcgtaaag	ctaatgaagc	tggtttacact	tcttggcagg	gtaaccctat	taagaatggt	5940
tatgaatcat	atgctaagtt	catgaagaat	gtagatttca	gcaagctgtc	ccctgaagca	6000
ttggaagcaa	ttggtaaatac	tgctctggaa	tatgaccaac	gtgagaatgc	tactgtagat	6060

gatattgcta	acgctgcatc	tctgattgaa	cgtaacttac	gtaatattgc	actgggtgta	6120
gatattcgtc	ataaggtgct	ggataaggta	aatctgtcca	ttgaccagat	ggctgctgta	6180
ggctgctcctt	atcagaacaa	cggtaagatt	gacctcagca	atatgacccc	tgaacaacag	6240
gctgatgaac	tgaataaact	tttccgtgaa	gagttagaag	cccgtaaaca	aaaagtcgct	6300
aaggctaggg	ctgaagtcaa	agaagaaact	gtttctgaaa	aagaaccagt	gaatccagac	6360
tttggtatgg	taggccgtga	gcataaggca	tctgggtgttc	gtatcctgtc	tgctactgct	6420
attcgtaatc	tggctaagat	tagtaatctg	ccatctactc	aggcagctac	tcttgcgag	6480
attcagaaat	cactggcagc	taaagactat	aagattatct	acggtacacc	tactcagggt	6540
gcagagtatg	ctcgtcagaa	gaatgttact	gaattgactt	ctcaggaaat	ggaagaagct	6600
caggcaggta	atatttatgg	ctggactaac	ttcgatgata	agaccattta	tctggttagc	6660
ccatctatgg	aaacctcat	tcatgaactg	gttcatgcct	ctaccttcga	ggaagtttat	6720
tccttctatc	agggtaatga	agtaagccct	acttctaagc	aggctattga	gaaccttgaa	6780
ggctctgatgg	aacagttccg	ttctctggat	atttccaaag	attctccaga	aatgagagaa	6840
gcatatgctg	atgctattgc	aactatcgaa	ggtcatttga	gtaatggatt	tgttgacca	6900
gctatctcta	aagctgctgc	tcttaatgag	tttatggctt	gggggtagc	taaccgtgct	6960
cttgctgcta	aacagaagag	aacatcttca	ctgggtcaaa	tggtgaaaga	tgtttatcag	7020
gctattaaga	aattgatattg	gggacgtaaa	caagctcctg	cattgggaga	agatatgttc	7080
tccaatctgc	tgtttaactc	tgcaattctg	atgcgtagcc	aacctacaac	tcaggcagta	7140
gctaaagatg	gcacactggt	ccatagcaaa	gcatatggta	ataatgaacg	tctgtctcag	7200
ttgaaccaga	ctttcgataa	actggtaact	gattaccttc	gtactgacct	agttacagaa	7260
gtagaacgtc	gtggcaatgt	ggctaattgca	ttaatgagtg	ctactcgact	ggttcgtgat	7320
gttcagtctc	atggcttcaa	tatgactgct	caggaacagt	ctgtattcca	gatgggtact	7380
gctgcattag	caactgaagc	tgcgattgac	ccacatgcta	tggctcgtgc	tcagggaactt	7440
tatacccatg	taatgaaaca	ccttacggta	gagcatttca	tggctgacct	tgatagtact	7500
aacctgctg	accgttacta	tgctcaacag	aaatatgaca	ccatctctgg	tgctaactctg	7560
gttgaagtag	atgccaaagg	tagaaccagt	ctgttaccta	cattcctggg	tctggctatg	7620
gttaatgaag	aactacgttc	aatcattaaa	gaaatgcctg	tacctaaagc	agataagaaa	7680
ttagggaatg	atatagatac	tctgcttacc	aatgcaggta	ctcaggtaat	ggaatctctg	7740
aacctgctg	tggctgggtga	ccagaaaagct	actaatgttc	aggacagtat	tgatgctttg	7800

tcagaaacaa	tcattggctgc	tgctttgaaa	cgagagtcct	tctatgatgc	tgtagcaacc	7860
cctaccggta	acttcattga	ccgtgcta	cagtacgtaa	cggatagcat	tgaacgggta	7920
tctgaaactg	ttattgagaa	ggcagataag	gtaattgcta	acccttctaa	tatagctgct	7980
aaagggtgtg	ctcatctggc	taaactgact	gctgctattg	catctgaaaa	acaggggtgaa	8040
atagtggctc	aggggtgttat	gactgctatg	aaccagggta	aagtatggca	acctttccat	8100
gacttagtta	atgacattgt	tggccgtact	aagactaatg	ccaatgtcta	tgacttaatc	8160
aaattgggta	agagccagat	ttctcaagac	cgtcagcaat	tccgtgagca	tttacctaca	8220
gtcattgctg	gtaagtcttc	tcgtaaattg	actgataccg	aatggctctgc	aatgcatact	8280
ggtttaggta	aaacagattt	agctgttcta	cgtgaaacta	tgagcatggc	tgaaattaga	8340
gatttactct	cttcatccaa	gaaagtgaaa	gatgaaatct	ctactctgga	aaaagagatt	8400
cagaaccaag	caggtagaaa	ctggaatctg	gttcagaaga	aatctaagca	actggctcaa	8460
tacatgatta	tgggggaagt	aggtaataac	ctccttcgta	atgcccctgc	tattagtcgt	8520
ttgttaggtg	aacgtattac	taatggctct	gtggcagatg	tagctgctat	tgataagctc	8580
attactttgt	actctctgga	attgatgaat	aagtctgacc	gtgacctttt	gtcagaattg	8640
gctcaatcag	aagtgggaagg	tatggagttc	tccattgctt	atatggttgg	tcaacgtact	8700
gaagagatgc	gtaaagctaa	aggtgataac	cgtactctgc	tgaatcactt	taaaggctat	8760
atccctgtag	agaaccagca	agggtgtgaat	ttgattattg	ctgacgataa	agagtttgct	8820
aagttaaata	gccaatcctt	tactcgtatt	ggtacttata	aggggagcac	tggtttccgt	8880
actggttcta	aaggttatta	cttcagccca	gtagctgccc	gtgcccctta	ctctcagggg	8940
attcttcaga	acgttcgtaa	tactgctggg	gggtgtggata	ttgggtactgg	ctttacgtta	9000
ggcactatgg	ttgctggggc	tattactgac	aaaccaaccg	tagagcgtat	taccaaagct	9060
ctggctaaag	gtgagcgtgg	gcgtgaacca	ctgatgccaa	tttataacag	caaaggctcag	9120
gtagttgctt	atgaacaatc	cgttgaccct	aatatgttga	agcacctaaa	ccaagacaat	9180
cactttgcta	agatgggttg	tgtatggcgt	ggcgtcagg	tggaagaggc	taaagcacia	9240
cgttttaatg	acattctcat	tgagcaatta	catgctatgt	atgagaaaga	cattaaagac	9300
tccagtgcta	ataaatctca	atatgtaaac	ctgttaggta	aaattgatga	cccagtactg	9360
gctgatgcga	ttaacctgat	gaacattgag	actcgtcata	aggccgaaga	actcttcggg	9420
aaagatgagt	tatgggttcg	tagggatatg	ctgaatgatg	cacttggcta	tcgtgctgca	9480
tctattgggtg	atgtgtggac	cggtaaactct	cgttgggtcac	ctagcaccct	tgatactggt	9540

aagaagatgt tcctcgggtgc attcggtaat aaggcatatc atgtagtaat gaatgctgaa 9600  
aataccattc agaacttagt gaaggacgct aagacagtaa ttgttgtaa atctgttgta 9660  
gtaccggcag ttaacttcct tgctaacatc taccagatga ttggacgtgg tgttcctggt 9720  
aaagatattg ctgtgaacat tcctcgtgaag acgtcagaga ttaatcagta tattaaatct 9780  
cgtttacgtc agattgatgc ggaagcagag ctacgtgctg ctgaaggtaa ccctaactctg 9840  
gttcgtaaac ttaaaaactga gattcaatct attactgata gtcacgtcgc tatgagtatc 9900  
tggcctttga ttgaagcagg tgagttctct tctattgctg atgctgggat tagtcgtgat 9960  
gacctgttag tagctgaagg taagattcat gagtacatgg aaaaacttgc taataaactt 10020  
ccagaaaaag tacgtaatgc tggccgttac gctcttattg ctaaggacac tgctctgttc 10080  
cagggtatcc agaaaacagt agagtattca gactttattg ctaaagccat catctatgat 10140  
gatttagtga aacgtaagaa aaaatcttct tctgaagcat taggtcaggt aactgaagag 10200  
tttattaact atgacagatt gcctgggtcgt ttccgtggct atatggaaaag tatgggtctg 10260  
atgtgggttct acaacttta aattcgttcc attaaagttg ctatgagcat gattagaaac 10320  
aaccagtac attctctgat tgctacagta gtacctgctc ctaccatggt tggtaacgta 10380  
ggcttaccaa ttcaggacaa catgctaacc atgctggctg aaggaagact ggattactca 10440  
ttaggcttcg gacaaggatt aagagcacct accctcaatc cttgggtcaa ccttactcac 10500  
taataa 10506

<210> 2  
<211> 3500  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 2

Met Ser Val Phe Asp Arg Leu Ala Gly Phe Ala Asp Ser Val Thr Asn  
1 5 10 15

Ala Lys Gln Val Asp Val Ser Thr Ala Thr Ala Gln Lys Lys Ala Glu  
20 25 30

Gln Gly Val Thr Thr Pro Leu Val Ser Pro Asp Ala Ala Tyr Gln Met  
35 40 45

Gln Ala Ala Arg Thr Gly Asn Val Gly Ala Asn Ala Phe Glu Pro Gly  
50 55 60

Thr Val Gln Ser Asp Phe Met Asn Leu Thr Pro Met Gln Ile Met Asn  
65 70 75 80

Lys Tyr Gly Val Glu Gln Gly Leu Gln Leu Ile Asn Ala Arg Ala Asp  
85 90 95

Ala Gly Asn Gln Val Phe Asn Asp Ser Val Thr Thr Arg Thr Pro Gly  
100 105 110

Glu Glu Leu Gly Asp Ile Ala Thr Gly Val Gly Leu Gly Phe Val Asn  
115 120 125

Thr Leu Gly Gly Ile Gly Ala Leu Gly Ala Gly Leu Leu Asn Asp Asp  
130 135 140

Ala Gly Ala Val Val Ala Gln Gln Leu Ser Lys Phe Asn Asp Ala Val  
145 150 155 160

His Ala Thr Gln Ser Gln Ala Leu Gln Asp Lys Arg Lys Leu Phe Ala  
165 170 175

Ala Arg Asn Leu Met Asn Glu Val Glu Ser Glu Arg Gln Tyr Gln Thr  
180 185 190

Asp Lys Lys Glu Gly Thr Asn Asp Ile Val Ala Ser Leu Ser Lys Phe  
195 200 205

Gly Arg Asp Phe Val Gly Ser Ile Glu Asn Ala Ala Gln Thr Asp Ser  
210 215 220

Ile Ile Ser Asp Gly Leu Ala Glu Gly Val Gly Ser Leu Leu Gly Ala  
225 230 235 240

Gly Pro Val Leu Arg Gly Ala Ser Leu Leu Gly Lys Ala Val Val Pro  
245 250 255

Ala Asn Thr Leu Arg Ser Ala Ala Leu Ala Gly Ala Ile Asp Ala Gly  
260 265 270



Thr Gly Thr Gln Ser Leu Ala Arg Ile Ala Ser Thr Val Gly Arg Ala  
 275 280 285

Ala Pro Gly Met Val Gly Val Gly Ala Met Glu Ala Gly Gly Ala Tyr  
 290 295 300

Gln Gln Thr Ala Asp Glu Ile Met Lys Met Ser Leu Lys Asp Leu Glu  
 305 310 315 320

Lys Ser Pro Val Tyr Gln Gln His Ile Lys Asp Gly Met Ser Pro Glu  
 325 330 335

Gln Ala Arg Arg Gln Thr Ala Ser Glu Thr Gly Leu Thr Ala Ala Ala  
 340 345 350

Ile Gln Leu Pro Ile Ala Ala Ala Thr Gly Pro Leu Val Ser Arg Phe  
 355 360 365

Glu Met Ala Pro Phe Arg Ala Gly Ser Leu Gly Ala Val Gly Met Asn  
 370 375 380

Leu Ala Arg Glu Thr Val Glu Glu Gly Val Gln Gly Ala Thr Gly Gln  
 385 390 395 400

Leu Ala Gln Asn Ile Ala Gln Gln Gln Asn Ile Asp Lys Asn Gln Asp  
 405 410 415

Leu Leu Lys Gly Val Gly Thr Gln Ala Gly Leu Gly Ala Leu Tyr Gly  
 420 425 430

Phe Gly Ser Ala Gly Val Val Gln Ala Pro Ala Gly Ala Ala Arg Leu  
 435 440 445

Ala Gly Ala Ala Thr Ala Pro Val Leu Arg Thr Thr Met Ala Gly Val  
 450 455 460

Lys Ala Ala Gly Ser Val Ala Gly Lys Val Val Ser Pro Ile Lys Asn  
 465 470 475 480

Thr Leu Val Ala Arg Gly Glu Arg Val Met Lys Gln Asn Glu Glu Ala  
 485 490 495

Ser Pro Val Ala Asp Asp Tyr Val Ala Gln Ala Ala Gln Glu Ala Met  
500 505 510

Ala Gln Ala Pro Glu Ala Glu Val Thr Ile Arg Asp Ala Val Glu Ala  
515 520 525

Thr Asp Ala Thr Pro Glu Gln Lys Val Ala Ala His Gln Tyr Val Ser  
530 535 540

Asp Leu Met Asn Ala Thr Arg Phe Asn Pro Glu Asn Tyr Gln Glu Ala  
545 550 555 560

Pro Glu His Ile Arg Asn Ala Val Ala Gly Ser Thr Asp Gln Val Gln  
565 570 575

Val Ile Gln Lys Leu Ala Asp Leu Val Asn Thr Leu Asp Glu Ser Asn  
580 585 590

Pro Gln Ala Leu Met Glu Ala Ala Ser Tyr Met Tyr Asp Ala Val Ser  
595 600 605

Glu Phe Glu Gln Phe Ile Asn Arg Asp Pro Ala Ala Leu Asp Ser Ile  
610 615 620

Pro Lys Asp Ser Pro Ala Ile Glu Leu Leu Asn Arg Tyr Thr Asn Leu  
625 630 635 640

Thr Ala Asn Ile Gln Asn Thr Pro Lys Val Ile Gly Ala Leu Asn Val  
645 650 655

Ile Asn Arg Met Ile Asn Glu Ser Ala Gln Asn Gly Ser Leu Asn Val  
660 665 670

Thr Glu Glu Ser Ser Pro Gln Glu Met Gln Asn Val Ala Leu Ala Ala  
675 680 685

Glu Val Ala Pro Glu Lys Leu Asn Pro Glu Ser Val Asn Val Val Leu  
690 695 700

Lys His Ala Ala Asp Gly Arg Ile Lys Leu Asn Asn Arg Gln Ile Ala  
705 710 715 720

Ala Leu Gln Asn Ala Ala Ala Ile Leu Lys Gly Ala Arg Glu Tyr Asp  
725 730 735

Ala Glu Ala Ala Arg Leu Gly Leu Arg Pro Gln Asp Ile Val Ser Lys  
740 745 750

Gln Ile Lys Thr Asp Glu Ser Arg Thr Gln Glu Gly Gln Tyr Ser Ala  
755 760 765

Leu Gln His Ala Asn Arg Ile Arg Ser Ala Tyr Asn Ser Gly Asn Phe  
770 775 780

Glu Leu Ala Ser Ala Tyr Leu Asn Asp Phe Met Gln Phe Ala Gln His  
785 790 795 800

Met Gln Asn Lys Val Gly Ala Leu Asn Glu His Leu Val Thr Gly Asn  
805 810 815

Ala Asp Lys Asn Lys Ser Val His Tyr Gln Ala Leu Thr Ala Asp Arg  
820 825 830

Glu Trp Val Arg Ser Arg Thr Gly Leu Gly Val Asn Pro Tyr Asp Thr  
835 840 845

Lys Ser Val Lys Phe Ala Gln Gln Val Ala Leu Glu Ala Lys Thr Val  
850 855 860

Ala Asp Ile Ala Asn Ala Leu Ala Ser Ala Tyr Pro Glu Leu Lys Val  
865 870 875 880

Ser His Ile Lys Val Thr Pro Leu Asp Ser Arg Leu Asn Ala Pro Ala  
885 890 895

Ala Glu Val Val Lys Ala Phe Arg Gln Gly Asn Arg Asp Val Ala Ser  
900 905 910

Ser Gln Pro Lys Ala Asp Ser Val Asn Gln Val Lys Glu Thr Pro Val  
915 920 925

Thr Lys Gln Glu Pro Val Thr Ser Thr Val Gln Thr Lys Thr Pro Val  
930 935 940

Ser Glu Ser Val Lys Thr Glu Pro Thr Thr Lys Glu Ser Ser Pro Gln  
 945 950 955 960

Ala Ile Lys Glu Pro Val Asn Gln Ser Glu Lys Gln Asp Val Asn Leu  
 965 970 975

Thr Asn Glu Asp Asn Ile Lys Gln Pro Thr Glu Ser Val Lys Glu Thr  
 980 985 990

Glu Thr Ser Thr Lys Glu Ser Thr Val Thr Glu Glu Leu Lys Glu Gly  
 995 1000 1005

Ile Asp Ala Val Tyr Pro Ser Leu Val Gly Thr Ala Asp Ser Lys  
 1010 1015 1020

Ala Glu Gly Ile Lys Asn Tyr Phe Lys Leu Ser Phe Thr Leu Pro  
 1025 1030 1035

Glu Glu Gln Lys Ser Arg Thr Val Gly Ser Glu Ala Pro Leu Lys  
 1040 1045 1050

Asp Val Ala Gln Ala Leu Ser Ser Arg Ala Arg Tyr Glu Leu Phe  
 1055 1060 1065

Thr Glu Lys Glu Thr Ala Asn Pro Ala Phe Asn Gly Glu Val Ile  
 1070 1075 1080

Lys Arg Tyr Lys Glu Leu Met Glu His Gly Glu Gly Ile Ala Asp  
 1085 1090 1095

Ile Leu Arg Ser Arg Leu Ala Lys Phe Leu Asn Thr Lys Asp Val  
 1100 1105 1110

Gly Lys Arg Phe Ala Gln Gly Thr Glu Ala Asn Arg Trp Val Gly  
 1115 1120 1125

Gly Lys Leu Leu Asn Ile Val Glu Gln Asp Gly Asp Thr Phe Lys  
 1130 1135 1140

Tyr Asn Glu Gln Leu Leu Gln Thr Ala Val Leu Ala Gly Leu Gln  
 1145 1150 1155

Trp	Arg	Leu	Thr	Ala	Thr	Ser	Asn	Thr	Ala	Ile	Lys	Asp	Ala	Lys
	1160					1165					1170			
Asp	Val	Ala	Ala	Ile	Thr	Gly	Ile	Asp	Gln	Ala	Leu	Leu	Pro	Glu
	1175					1180					1185			
Gly	Leu	Val	Glu	Gln	Phe	Asp	Thr	Gly	Met	Thr	Leu	Thr	Glu	Ala
	1190					1195					1200			
Val	Ser	Ser	Leu	Ala	Gln	Lys	Ile	Glu	Ser	Tyr	Trp	Gly	Leu	Ser
	1205					1210					1215			
Arg	Asn	Pro	Asn	Ala	Pro	Leu	Gly	Tyr	Thr	Lys	Gly	Ile	Pro	Thr
	1220					1225					1230			
Ala	Met	Ala	Ala	Glu	Ile	Leu	Ala	Ala	Phe	Val	Glu	Ser	Thr	Asp
	1235					1240					1245			
Val	Val	Glu	Asn	Ile	Val	Asp	Met	Ser	Glu	Ile	Asp	Pro	Asp	Asn
	1250					1255					1260			
Lys	Lys	Thr	Ile	Gly	Leu	Tyr	Thr	Ile	Thr	Glu	Leu	Asp	Ser	Phe
	1265					1270					1275			
Asp	Pro	Ile	Asn	Ser	Phe	Pro	Thr	Ala	Ile	Glu	Glu	Ala	Val	Leu
	1280					1285					1290			
Val	Asn	Pro	Thr	Glu	Lys	Met	Phe	Phe	Gly	Asp	Asp	Ile	Pro	Pro
	1295					1300					1305			
Val	Ala	Asn	Thr	Gln	Leu	Arg	Asn	Pro	Ala	Val	Arg	Asn	Thr	Pro
	1310					1315					1320			
Glu	Gln	Lys	Ala	Ala	Leu	Lys	Ala	Glu	Gln	Ala	Thr	Glu	Phe	Tyr
	1325					1330					1335			
Val	His	Thr	Pro	Met	Val	Gln	Phe	Tyr	Glu	Thr	Leu	Gly	Lys	Asp
	1340					1345					1350			
Arg	Ile	Leu	Glu	Leu	Met	Gly	Ala	Gly	Thr	Leu	Asn	Lys	Glu	Leu
	1355					1360					1365			

Leu	Asn	Asp	Asn	His	Ala	Lys	Ser	Leu	Glu	Gly	Lys	Asn	Arg	Ser
1370						1375					1380			
Val	Glu	Asp	Ser	Tyr	Asn	Gln	Leu	Phe	Ser	Val	Ile	Glu	Gln	Val
1385						1390					1395			
Arg	Ala	Gln	Ser	Glu	Asp	Ile	Ser	Thr	Val	Pro	Ile	His	Tyr	Ala
1400						1405					1410			
Tyr	Asn	Met	Thr	Arg	Val	Gly	Arg	Met	Gln	Met	Leu	Gly	Lys	Tyr
1415						1420					1425			
Asn	Pro	Gln	Ser	Ala	Lys	Leu	Val	Arg	Glu	Ala	Ile	Leu	Pro	Thr
1430						1435					1440			
Lys	Ala	Thr	Leu	Asp	Leu	Ser	Asn	Gln	Asn	Asn	Glu	Asp	Phe	Ser
1445						1450					1455			
Ala	Phe	Gln	Leu	Gly	Leu	Ala	Gln	Ala	Leu	Asp	Ile	Lys	Val	His
1460						1465					1470			
Thr	Met	Thr	Arg	Glu	Val	Met	Ser	Asp	Glu	Leu	Thr	Lys	Leu	Leu
1475						1480					1485			
Glu	Gly	Asn	Leu	Lys	Pro	Ala	Ile	Asp	Met	Met	Val	Glu	Phe	Asn
1490						1495					1500			
Thr	Thr	Gly	Ser	Leu	Pro	Glu	Asn	Ala	Val	Asp	Val	Leu	Asn	Thr
1505						1510					1515			
Ala	Leu	Gly	Asp	Arg	Lys	Ser	Phe	Val	Ala	Leu	Met	Ala	Leu	Met
1520						1525					1530			
Glu	Tyr	Ser	Arg	Tyr	Leu	Val	Ala	Glu	Asp	Lys	Ser	Ala	Phe	Val
1535						1540					1545			
Thr	Pro	Leu	Tyr	Val	Glu	Ala	Asp	Gly	Val	Thr	Asn	Gly	Pro	Ile
1550						1555					1560			
Asn	Ala	Met	Met	Leu	Met	Thr	Gly	Gly	Leu	Phe	Thr	Pro	Asp	Trp
1565						1570					1575			

Ile	Arg	Asn	Ile	Ala	Lys	Gly	Gly	Leu	Phe	Ile	Gly	Ser	Pro	Asn
	1580					1585					1590			
Lys	Thr	Met	Asn	Glu	His	Arg	Ser	Thr	Ala	Asp	Asn	Asn	Asp	Leu
	1595					1600					1605			
Tyr	Gln	Ala	Ser	Thr	Asn	Ala	Leu	Met	Glu	Ser	Leu	Gly	Lys	Leu
	1610					1615					1620			
Arg	Ser	Asn	Tyr	Ala	Ser	Asn	Met	Pro	Ile	Gln	Ser	Gln	Ile	Asp
	1625					1630					1635			
Ser	Leu	Leu	Ser	Leu	Met	Asp	Leu	Phe	Leu	Pro	Asp	Ile	Asn	Leu
	1640					1645					1650			
Gly	Glu	Asn	Gly	Ala	Leu	Glu	Leu	Lys	Arg	Gly	Ile	Ala	Lys	Asn
	1655					1660					1665			
Pro	Leu	Thr	Ile	Thr	Ile	Tyr	Gly	Ser	Gly	Ala	Arg	Gly	Ile	Ala
	1670					1675					1680			
Gly	Lys	Leu	Val	Ser	Ser	Val	Thr	Asp	Ala	Ile	Tyr	Glu	Arg	Met
	1685					1690					1695			
Ser	Asp	Val	Leu	Lys	Ala	Arg	Ala	Lys	Asp	Pro	Asn	Ile	Ser	Ala
	1700					1705					1710			
Ala	Met	Ala	Met	Phe	Gly	Lys	Gln	Ala	Ala	Ser	Glu	Ala	His	Ala
	1715					1720					1725			
Glu	Glu	Leu	Leu	Ala	Arg	Phe	Leu	Lys	Asp	Met	Glu	Thr	Leu	Thr
	1730					1735					1740			
Ser	Thr	Val	Pro	Val	Lys	Arg	Lys	Gly	Val	Leu	Glu	Leu	Gln	Ser
	1745					1750					1755			
Thr	Gly	Thr	Gly	Ala	Lys	Gly	Lys	Ile	Asn	Pro	Lys	Thr	Tyr	Thr
	1760					1765					1770			
Ile	Lys	Gly	Glu	Gln	Leu	Lys	Ala	Leu	Gln	Glu	Asn	Met	Leu	His
	1775					1780					1785			

Phe	Phe	Val	Glu	Pro	Leu	Arg	Asn	Gly	Ile	Thr	Gln	Thr	Val	Gly
1790						1795					1800			
Glu	Ser	Leu	Val	Tyr	Ser	Thr	Glu	Gln	Leu	Gln	Lys	Ala	Thr	Gln
1805						1810					1815			
Ile	Gln	Ser	Val	Val	Leu	Glu	Asp	Met	Phe	Lys	Gln	Arg	Val	Gln
1820						1825					1830			
Glu	Lys	Leu	Ala	Glu	Lys	Ala	Lys	Asp	Pro	Thr	Trp	Lys	Lys	Gly
1835						1840					1845			
Asp	Phe	Leu	Thr	Gln	Lys	Glu	Leu	Asn	Asp	Ile	Gln	Ala	Ser	Leu
1850						1855					1860			
Asn	Asn	Leu	Ala	Pro	Met	Ile	Glu	Thr	Gly	Ser	Gln	Thr	Phe	Tyr
1865						1870					1875			
Ile	Ala	Gly	Ser	Glu	Asn	Ala	Glu	Val	Ala	Asn	Gln	Val	Leu	Ala
1880						1885					1890			
Thr	Asn	Leu	Asp	Asp	Arg	Met	Arg	Val	Pro	Met	Ser	Ile	Tyr	Ala
1895						1900					1905			
Pro	Ala	Gln	Ala	Gly	Val	Ala	Gly	Ile	Pro	Phe	Met	Thr	Ile	Gly
1910						1915					1920			
Thr	Gly	Asp	Gly	Met	Met	Met	Gln	Thr	Leu	Ser	Thr	Met	Lys	Gly
1925						1930					1935			
Ala	Pro	Lys	Asn	Thr	Leu	Lys	Ile	Phe	Asp	Gly	Met	Asn	Ile	Gly
1940						1945					1950			
Leu	Asn	Asp	Ile	Thr	Asp	Ala	Ser	Arg	Lys	Ala	Asn	Glu	Ala	Val
1955						1960					1965			
Tyr	Thr	Ser	Trp	Gln	Gly	Asn	Pro	Ile	Lys	Asn	Val	Tyr	Glu	Ser
1970						1975					1980			
Tyr	Ala	Lys	Phe	Met	Lys	Asn	Val	Asp	Phe	Ser	Lys	Leu	Ser	Pro
1985						1990					1995			



Glu	Ala	Leu	Glu	Ala	Ile	Gly	Lys	Ser	Ala	Leu	Glu	Tyr	Asp	Gln
2000						2005					2010			
Arg	Glu	Asn	Ala	Thr	Val	Asp	Asp	Ile	Ala	Asn	Ala	Ala	Ser	Leu
2015						2020					2025			
Ile	Glu	Arg	Asn	Leu	Arg	Asn	Ile	Ala	Leu	Gly	Val	Asp	Ile	Arg
2030						2035					2040			
His	Lys	Val	Leu	Asp	Lys	Val	Asn	Leu	Ser	Ile	Asp	Gln	Met	Ala
2045						2050					2055			
Ala	Val	Gly	Ala	Pro	Tyr	Gln	Asn	Asn	Gly	Lys	Ile	Asp	Leu	Ser
2060						2065					2070			
Asn	Met	Thr	Pro	Glu	Gln	Gln	Ala	Asp	Glu	Leu	Asn	Lys	Leu	Phe
2075						2080					2085			
Arg	Glu	Glu	Leu	Glu	Ala	Arg	Lys	Gln	Lys	Val	Ala	Lys	Ala	Arg
2090						2095					2100			
Ala	Glu	Val	Lys	Glu	Glu	Thr	Val	Ser	Glu	Lys	Glu	Pro	Val	Asn
2105						2110					2115			
Pro	Asp	Phe	Gly	Met	Val	Gly	Arg	Glu	His	Lys	Ala	Ser	Gly	Val
2120						2125					2130			
Arg	Ile	Leu	Ser	Ala	Thr	Ala	Ile	Arg	Asn	Leu	Ala	Lys	Ile	Ser
2135						2140					2145			
Asn	Leu	Pro	Ser	Thr	Gln	Ala	Ala	Thr	Leu	Ala	Glu	Ile	Gln	Lys
2150						2155					2160			
Ser	Leu	Ala	Ala	Lys	Asp	Tyr	Lys	Ile	Ile	Tyr	Gly	Thr	Pro	Thr
2165						2170					2175			
Gln	Val	Ala	Glu	Tyr	Ala	Arg	Gln	Lys	Asn	Val	Thr	Glu	Leu	Thr
2180						2185					2190			
Ser	Gln	Glu	Met	Glu	Glu	Ala	Gln	Ala	Gly	Asn	Ile	Tyr	Gly	Trp
2195						2200					2205			

Thr	Asn	Phe	Asp	Asp	Lys	Thr	Ile	Tyr	Leu	Val	Ser	Pro	Ser	Met
2210						2215					2220			
Glu	Thr	Leu	Ile	His	Glu	Leu	Val	His	Ala	Ser	Thr	Phe	Glu	Glu
2225						2230					2235			
Val	Tyr	Ser	Phe	Tyr	Gln	Gly	Asn	Glu	Val	Ser	Pro	Thr	Ser	Lys
2240						2245					2250			
Gln	Ala	Ile	Glu	Asn	Leu	Glu	Gly	Leu	Met	Glu	Gln	Phe	Arg	Ser
2255						2260					2265			
Leu	Asp	Ile	Ser	Lys	Asp	Ser	Pro	Glu	Met	Arg	Glu	Ala	Tyr	Ala
2270						2275					2280			
Asp	Ala	Ile	Ala	Thr	Ile	Glu	Gly	His	Leu	Ser	Asn	Gly	Phe	Val
2285						2290					2295			
Asp	Pro	Ala	Ile	Ser	Lys	Ala	Ala	Ala	Leu	Asn	Glu	Phe	Met	Ala
2300						2305					2310			
Trp	Gly	Leu	Ala	Asn	Arg	Ala	Leu	Ala	Ala	Lys	Gln	Lys	Arg	Thr
2315						2320					2325			
Ser	Ser	Leu	Val	Gln	Met	Val	Lys	Asp	Val	Tyr	Gln	Ala	Ile	Lys
2330						2335					2340			
Lys	Leu	Ile	Trp	Gly	Arg	Lys	Gln	Ala	Pro	Ala	Leu	Gly	Glu	Asp
2345						2350					2355			
Met	Phe	Ser	Asn	Leu	Leu	Phe	Asn	Ser	Ala	Ile	Leu	Met	Arg	Ser
2360						2365					2370			
Gln	Pro	Thr	Thr	Gln	Ala	Val	Ala	Lys	Asp	Gly	Thr	Leu	Phe	His
2375						2380					2385			
Ser	Lys	Ala	Tyr	Gly	Asn	Asn	Glu	Arg	Leu	Ser	Gln	Leu	Asn	Gln
2390						2395					2400			
Thr	Phe	Asp	Lys	Leu	Val	Thr	Asp	Tyr	Leu	Arg	Thr	Asp	Pro	Val
2405						2410					2415			

Thr	Glu	Val	Glu	Arg	Arg	Gly	Asn	Val	Ala	Asn	Ala	Leu	Met	Ser
2420						2425					2430			
Ala	Thr	Arg	Leu	Val	Arg	Asp	Val	Gln	Ser	His	Gly	Phe	Asn	Met
2435						2440					2445			
Thr	Ala	Gln	Glu	Gln	Ser	Val	Phe	Gln	Met	Val	Thr	Ala	Ala	Leu
2450						2455					2460			
Ala	Thr	Glu	Ala	Ala	Ile	Asp	Pro	His	Ala	Met	Ala	Arg	Ala	Gln
2465						2470					2475			
Glu	Leu	Tyr	Thr	His	Val	Met	Lys	His	Leu	Thr	Val	Glu	His	Phe
2480						2485					2490			
Met	Ala	Asp	Pro	Asp	Ser	Thr	Asn	Pro	Ala	Asp	Arg	Tyr	Tyr	Ala
2495						2500					2505			
Gln	Gln	Lys	Tyr	Asp	Thr	Ile	Ser	Gly	Ala	Asn	Leu	Val	Glu	Val
2510						2515					2520			
Asp	Ala	Lys	Gly	Arg	Thr	Ser	Leu	Leu	Pro	Thr	Phe	Leu	Gly	Leu
2525						2530					2535			
Ala	Met	Val	Asn	Glu	Glu	Leu	Arg	Ser	Ile	Ile	Lys	Glu	Met	Pro
2540						2545					2550			
Val	Pro	Lys	Ala	Asp	Lys	Lys	Leu	Gly	Asn	Asp	Ile	Asp	Thr	Leu
2555						2560					2565			
Leu	Thr	Asn	Ala	Gly	Thr	Gln	Val	Met	Glu	Ser	Leu	Asn	Arg	Arg
2570						2575					2580			
Met	Ala	Gly	Asp	Gln	Lys	Ala	Thr	Asn	Val	Gln	Asp	Ser	Ile	Asp
2585						2590					2595			
Ala	Leu	Ser	Glu	Thr	Ile	Met	Ala	Ala	Ala	Leu	Lys	Arg	Glu	Ser
2600						2605					2610			
Phe	Tyr	Asp	Ala	Val	Ala	Thr	Pro	Thr	Gly	Asn	Phe	Ile	Asp	Arg
2615						2620					2625			

Ala	Asn	Gln	Tyr	Val	Thr	Asp	Ser	Ile	Glu	Arg	Leu	Ser	Glu	Thr
2630						2635					2640			
Val	Ile	Glu	Lys	Ala	Asp	Lys	Val	Ile	Ala	Asn	Pro	Ser	Asn	Ile
2645						2650					2655			
Ala	Ala	Lys	Gly	Val	Ala	His	Leu	Ala	Lys	Leu	Thr	Ala	Ala	Ile
2660						2665					2670			
Ala	Ser	Glu	Lys	Gln	Gly	Glu	Ile	Val	Ala	Gln	Gly	Val	Met	Thr
2675						2680					2685			
Ala	Met	Asn	Gln	Gly	Lys	Val	Trp	Gln	Pro	Phe	His	Asp	Leu	Val
2690						2695					2700			
Asn	Asp	Ile	Val	Gly	Arg	Thr	Lys	Thr	Asn	Ala	Asn	Val	Tyr	Asp
2705						2710					2715			
Leu	Ile	Lys	Leu	Val	Lys	Ser	Gln	Ile	Ser	Gln	Asp	Arg	Gln	Gln
2720						2725					2730			
Phe	Arg	Glu	His	Leu	Pro	Thr	Val	Ile	Ala	Gly	Lys	Phe	Ser	Arg
2735						2740					2745			
Lys	Leu	Thr	Asp	Thr	Glu	Trp	Ser	Ala	Met	His	Thr	Gly	Leu	Gly
2750						2755					2760			
Lys	Thr	Asp	Leu	Ala	Val	Leu	Arg	Glu	Thr	Met	Ser	Met	Ala	Glu
2765						2770					2775			
Ile	Arg	Asp	Leu	Leu	Ser	Ser	Ser	Lys	Lys	Val	Lys	Asp	Glu	Ile
2780						2785					2790			
Ser	Thr	Leu	Glu	Lys	Glu	Ile	Gln	Asn	Gln	Ala	Gly	Arg	Asn	Trp
2795						2800					2805			
Asn	Leu	Val	Gln	Lys	Lys	Ser	Lys	Gln	Leu	Ala	Gln	Tyr	Met	Ile
2810						2815					2820			
Met	Gly	Glu	Val	Gly	Asn	Asn	Leu	Leu	Arg	Asn	Ala	His	Ala	Ile
2825						2830					2835			

Ser	Arg	Leu	Leu	Gly	Glu	Arg	Ile	Thr	Asn	Gly	Pro	Val	Ala	Asp
2840						2845					2850			
Val	Ala	Ala	Ile	Asp	Lys	Leu	Ile	Thr	Leu	Tyr	Ser	Leu	Glu	Leu
2855						2860					2865			
Met	Asn	Lys	Ser	Asp	Arg	Asp	Leu	Leu	Ser	Glu	Leu	Ala	Gln	Ser
2870						2875					2880			
Glu	Val	Glu	Gly	Met	Glu	Phe	Ser	Ile	Ala	Tyr	Met	Val	Gly	Gln
2885						2890					2895			
Arg	Thr	Glu	Glu	Met	Arg	Lys	Ala	Lys	Gly	Asp	Asn	Arg	Thr	Leu
2900						2905					2910			
Leu	Asn	His	Phe	Lys	Gly	Tyr	Ile	Pro	Val	Glu	Asn	Gln	Gln	Gly
2915						2920					2925			
Val	Asn	Leu	Ile	Ile	Ala	Asp	Asp	Lys	Glu	Phe	Ala	Lys	Leu	Asn
2930						2935					2940			
Ser	Gln	Ser	Phe	Thr	Arg	Ile	Gly	Thr	Tyr	Gln	Gly	Ser	Thr	Gly
2945						2950					2955			
Phe	Arg	Thr	Gly	Ser	Lys	Gly	Tyr	Tyr	Phe	Ser	Pro	Val	Ala	Ala
2960						2965					2970			
Arg	Ala	Pro	Tyr	Ser	Gln	Gly	Ile	Leu	Gln	Asn	Val	Arg	Asn	Thr
2975						2980					2985			
Ala	Gly	Gly	Val	Asp	Ile	Gly	Thr	Gly	Phe	Thr	Leu	Gly	Thr	Met
2990						2995					3000			
Val	Ala	Gly	Arg	Ile	Thr	Asp	Lys	Pro	Thr	Val	Glu	Arg	Ile	Thr
3005						3010					3015			
Lys	Ala	Leu	Ala	Lys	Gly	Glu	Arg	Gly	Arg	Glu	Pro	Leu	Met	Pro
3020						3025					3030			
Ile	Tyr	Asn	Ser	Lys	Gly	Gln	Val	Val	Ala	Tyr	Glu	Gln	Ser	Val
3035						3040					3045			

Asp	Pro	Asn	Met	Leu	Lys	His	Leu	Asn	Gln	Asp	Asn	His	Phe	Ala
3050						3055					3060			
Lys	Met	Val	Gly	Val	Trp	Arg	Gly	Arg	Gln	Val	Glu	Glu	Ala	Lys
3065						3070					3075			
Ala	Gln	Arg	Phe	Asn	Asp	Ile	Leu	Ile	Glu	Gln	Leu	His	Ala	Met
3080						3085					3090			
Tyr	Glu	Lys	Asp	Ile	Lys	Asp	Ser	Ser	Ala	Asn	Lys	Ser	Gln	Tyr
3095						3100					3105			
Val	Asn	Leu	Leu	Gly	Lys	Ile	Asp	Asp	Pro	Val	Leu	Ala	Asp	Ala
3110						3115					3120			
Ile	Asn	Leu	Met	Asn	Ile	Glu	Thr	Arg	His	Lys	Ala	Glu	Glu	Leu
3125						3130					3135			
Phe	Gly	Lys	Asp	Glu	Leu	Trp	Val	Arg	Arg	Asp	Met	Leu	Asn	Asp
3140						3145					3150			
Ala	Leu	Gly	Tyr	Arg	Ala	Ala	Ser	Ile	Gly	Asp	Val	Trp	Thr	Gly
3155						3160					3165			
Asn	Ser	Arg	Trp	Ser	Pro	Ser	Thr	Leu	Asp	Thr	Val	Lys	Lys	Met
3170						3175					3180			
Phe	Leu	Gly	Ala	Phe	Gly	Asn	Lys	Ala	Tyr	His	Val	Val	Met	Asn
3185						3190					3195			
Ala	Glu	Asn	Thr	Ile	Gln	Asn	Leu	Val	Lys	Asp	Ala	Lys	Thr	Val
3200						3205					3210			
Ile	Val	Val	Lys	Ser	Val	Val	Val	Pro	Ala	Val	Asn	Phe	Leu	Ala
3215						3220					3225			
Asn	Ile	Tyr	Gln	Met	Ile	Gly	Arg	Gly	Val	Pro	Val	Lys	Asp	Ile
3230						3235					3240			
Ala	Val	Asn	Ile	Pro	Arg	Lys	Thr	Ser	Glu	Ile	Asn	Gln	Tyr	Ile
3245						3250					3255			

Lys	Ser	Arg	Leu	Arg	Gln	Ile	Asp	Ala	Glu	Ala	Glu	Leu	Arg	Ala
3260						3265					3270			
Ala	Glu	Gly	Asn	Pro	Asn	Leu	Val	Arg	Lys	Leu	Lys	Thr	Glu	Ile
3275						3280					3285			
Gln	Ser	Ile	Thr	Asp	Ser	His	Arg	Arg	Met	Ser	Ile	Trp	Pro	Leu
3290						3295					3300			
Ile	Glu	Ala	Gly	Glu	Phe	Ser	Ser	Ile	Ala	Asp	Ala	Gly	Ile	Ser
3305						3310					3315			
Arg	Asp	Asp	Leu	Leu	Val	Ala	Glu	Gly	Lys	Ile	His	Glu	Tyr	Met
3320						3325					3330			
Glu	Lys	Leu	Ala	Asn	Lys	Leu	Pro	Glu	Lys	Val	Arg	Asn	Ala	Gly
3335						3340					3345			
Arg	Tyr	Ala	Leu	Ile	Ala	Lys	Asp	Thr	Ala	Leu	Phe	Gln	Gly	Ile
3350						3355					3360			
Gln	Lys	Thr	Val	Glu	Tyr	Ser	Asp	Phe	Ile	Ala	Lys	Ala	Ile	Ile
3365						3370					3375			
Tyr	Asp	Asp	Leu	Val	Lys	Arg	Lys	Lys	Lys	Ser	Ser	Ser	Glu	Ala
3380						3385					3390			
Leu	Gly	Gln	Val	Thr	Glu	Glu	Phe	Ile	Asn	Tyr	Asp	Arg	Leu	Pro
3395						3400					3405			
Gly	Arg	Phe	Arg	Gly	Tyr	Met	Glu	Ser	Met	Gly	Leu	Met	Trp	Phe
3410						3415					3420			
Tyr	Asn	Phe	Lys	Ile	Arg	Ser	Ile	Lys	Val	Ala	Met	Ser	Met	Ile
3425						3430					3435			
Arg	Asn	Asn	Pro	Val	His	Ser	Leu	Ile	Ala	Thr	Val	Val	Pro	Ala
3440						3445					3450			
Pro	Thr	Met	Phe	Gly	Asn	Val	Gly	Leu	Pro	Ile	Gln	Asp	Asn	Met
3455						3460					3465			

Leu Thr Met Leu Ala Glu Gly Arg Leu Asp Tyr Ser Leu Gly Phe  
 3470 3475 3480

Gly Gln Gly Leu Arg Ala Pro Thr Leu Asn Pro Trp Phe Asn Leu  
 3485 3490 3495

Thr His  
 3500

<210> 3  
 <211> 3318  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic

<400> 3  
 gaaagtacag ttacagaaga attaaaagaa ggtattgatg ctgtttaccc ttcattggta 60  
 ggtactgctg attctaaagc agaggggtatt aagaactatt tcaaattgtc ctttacctta 120  
 ccagaagaac agaaatcccg tactgttggt tcagaagcac ctctaaaaga tgtagcccaa 180  
 gctctgtctt ctctgtctcg ttatgaactc tttactgaga aagaaactgc taaccctgct 240  
 tttaatgggg aagttattaa gcgatacaaa gaactcatgg aacatgggga aggtattgct 300  
 gatattcttc gctcccgctt ggctaagttc cttaacacta aggatgttgg taaacgtttt 360  
 gctcaaggta cagaagccaa ccgttgggta ggtggtaagt tacttaacat tgttgagcag 420  
 gatggggata cctttaagta caacgaacaa ttgctacaga ctgctgtatt agcaggtctt 480  
 caatggagac ttactgctac cagcaatact gctatcaaag atgcaaaaga tgttgctgct 540  
 attactggta ttgaccaagc tctgctgcca gaagggttag tagagcaatt tgatactggg 600  
 atgacactca ctgaagcagt tagttccctg gctcagaaaa ttgagtctta ctggggatta 660  
 tctcgtaatc caaatgctcc attgggctat accaaaggca tccctacagc aatggctgct 720  
 gaaattctgg ctgcatttgt agagtctact gatgtttag agaacatcgt ggatatgtca 780  
 gaaattgacc cagataacaa gaagactatt ggtctgtaca ccattactga actggattcc 840  
 ttcgacccaa ttaatagctt ccctactgct attgaagaag ctgttttagt gaatcctaca 900  
 gagaagatgt tctttgggtga tgacattcct cctgtagcta atactcagct tcgtaaccct 960  
 gctgttcgta atactccaga acagaaggct gcattgaaag cagagcaggc tacagagttc 1020  
 tatgtacaca cccaatgggt tcaattctat gagacgtag gtaaagaccg tattctcgaa 1080



ctgatgggtg	ctggtactct	gaataaagag	ttacttaatg	ataaccatgc	taaatctctg	1140
gaaggtaaga	accgttcagt	agaggactct	tacaaccaac	tgttctccgt	cattgagcag	1200
gtaagagcac	agagcgaaga	catctctact	gtacctattc	actatgcata	caatatgacc	1260
cgtgttggtc	gtatgcagat	gtaggtaaa	tacaatcctc	aatcagccaa	actggttcgt	1320
gaggccatct	tacctactaa	agctactttg	gatttatcga	accagaacaa	tgaagacttc	1380
tctgcattcc	agttaggtct	ggctcaggca	ttggacatta	aagtccatac	tatgactcgt	1440
gaggttatgt	ctgacgagtt	gactaaatta	ctggaaggta	atctgaaacc	agccattgat	1500
atgatgggtg	agtttaatac	cactggttcc	ttaccagaaa	acgcagttga	tgttctgaat	1560
acagcattag	gagataggaa	gtcattcgta	gcattgatgg	ctcttatgga	gtattcccgt	1620
tacttagtag	cagaggataa	atctgcattt	gtaactccac	tgtatgtaga	agcagatggg	1680
gttactaatg	gtccaatcaa	tgccatgatg	ctaatagacag	gcggtctgtt	tactcctgac	1740
tggattcgta	atattgccaa	agggggcctg	ttcattgggt	ctccaaataa	gaccatgaat	1800
gagcatcgct	ctactgctga	caataatgat	ttatatcaag	catccactaa	tgctttgatg	1860
gaatcgttgg	gtaagttacg	tagtaactat	gcctctaata	tgccatttca	gtctcagata	1920
gacagtcttc	tttctctgat	ggatttggtt	ttaccggata	ttaatcttgg	tgagaatggg	1980
gctttagaac	ttaaacgtgg	tattgctaag	aaccactga	ctattaccat	ctatggttct	2040
gggtgctcgtg	gtattgcagg	taagctgggt	agttctgtta	ctgatgccat	ctatgagcgt	2100
atgtctgatg	tactgaaagc	tcgtgctaaa	gacccaaata	tctctgctgc	tatggcaatg	2160
tttggtgaagc	aagctgcttc	agaagcacat	gctgaagaac	ttcttgcccg	tttctgaaa	2220
gatatggaaa	cactgacttc	tactgttcct	gttaaacgta	aagggtgtact	ggaactacaa	2280
tccacaggta	caggagccaa	aggaaaaatc	aatcctaaga	cctataccat	taagggcgag	2340
caactgaagg	cacttcagga	aaatatgctg	cacttctttg	tagaaccact	acgtaatggg	2400
attactcaga	ctgtaggtga	aagtctgggt	tactctactg	aacaattaca	gaaagctact	2460
cagattcaat	ctgtagtgct	ggaagatatg	ttcaaacagc	gagtacaaga	gaagctggca	2520
gagaaggcta	aagacccaac	atggaagaaa	ggtgatttcc	ttactcagaa	agaactgaat	2580
gatattcagg	cttctctgaa	taacttagcc	cctatgattg	agactgggtc	tcagactttc	2640
tacattgctg	gttcagaaaa	tgcagaagta	gcaaatacagg	tattagctac	taaccttgat	2700
gaccgtatgc	gtgtaccaat	gagtatctat	gctccagcac	aggccggtgt	agcaggtatt	2760
ccatttatga	ctattgggtac	tggtgatggc	atgatgatgc	aaactctttc	cactatgaaa	2820

ggtgcaccaa agaataccct caaaatcttt gatggtatga acattggttt gaatgacatc 2880  
 actgatgcca gtcgtaaagc taatgaagct gtttacactt cttggcaggg taaccctatt 2940  
 aagaatgttt atgaatcata tgctaagttc atgaagaatg tagatttcag caagctgtcc 3000  
 cctgaagcat tggaagcaat tggtaaactc gctctggaat atgaccaacg tgagaatgct 3060  
 actgtagatg atattgctaa cgctgcatct ctgattgaac gtaacttacg taatattgca 3120  
 ctgggtgtag atattcgtca taagggtgctg gataaggtaa atctgtccat tgaccagatg 3180  
 gctgctgtag gtgctcctta tcagaacaac ggtaagattg acctcagcaa tatgaccctt 3240  
 gaacaacagg ctgatgaact gaataaactt ttccgtgaag agttagaagc ccgtaaacia 3300  
 aaagtcgcta aggctagg 3318

<210> 4  
 <211> 1107  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic

<400> 4

Met Glu Ser Thr Val Thr Glu Glu Leu Lys Glu Gly Ile Asp Ala Val  
 1 5 10 15

Tyr Pro Ser Leu Val Gly Thr Ala Asp Ser Lys Ala Glu Gly Ile Lys  
 20 25 30

Asn Tyr Phe Lys Leu Ser Phe Thr Leu Pro Glu Glu Gln Lys Ser Arg  
 35 40 45

Thr Val Gly Ser Glu Ala Pro Leu Lys Asp Val Ala Gln Ala Leu Ser  
 50 55 60

Ser Arg Ala Arg Tyr Glu Leu Phe Thr Glu Lys Glu Thr Ala Asn Pro  
 65 70 75 80

Ala Phe Asn Gly Glu Val Ile Lys Arg Tyr Lys Glu Leu Met Glu His  
 85 90 95

Gly Glu Gly Ile Ala Asp Ile Leu Arg Ser Arg Leu Ala Lys Phe Leu  
 100 105 110

Asn Thr Lys Asp Val Gly Lys Arg Phe Ala Gln Gly Thr Glu Ala Asn  
115 120 125

Arg Trp Val Gly Gly Lys Leu Leu Asn Ile Val Glu Gln Asp Gly Asp  
130 135 140

Thr Phe Lys Tyr Asn Glu Gln Leu Leu Gln Thr Ala Val Leu Ala Gly  
145 150 155 160

Leu Gln Trp Arg Leu Thr Ala Thr Ser Asn Thr Ala Ile Lys Asp Ala  
165 170 175

Lys Asp Val Ala Ala Ile Thr Gly Ile Asp Gln Ala Leu Leu Pro Glu  
180 185 190

Gly Leu Val Glu Gln Phe Asp Thr Gly Met Thr Leu Thr Glu Ala Val  
195 200 205

Ser Ser Leu Ala Gln Lys Ile Glu Ser Tyr Trp Gly Leu Ser Arg Asn  
210 215 220

Pro Asn Ala Pro Leu Gly Tyr Thr Lys Gly Ile Pro Thr Ala Met Ala  
225 230 235 240

Ala Glu Ile Leu Ala Ala Phe Val Glu Ser Thr Asp Val Val Glu Asn  
245 250 255

Ile Val Asp Met Ser Glu Ile Asp Pro Asp Asn Lys Lys Thr Ile Gly  
260 265 270

Leu Tyr Thr Ile Thr Glu Leu Asp Ser Phe Asp Pro Ile Asn Ser Phe  
275 280 285

Pro Thr Ala Ile Glu Glu Ala Val Leu Val Asn Pro Thr Glu Lys Met  
290 295 300

Phe Phe Gly Asp Asp Ile Pro Pro Val Ala Asn Thr Gln Leu Arg Asn  
305 310 315 320

Pro Ala Val Arg Asn Thr Pro Glu Gln Lys Ala Ala Leu Lys Ala Glu  
325 330 335

Gln Ala Thr Glu Phe Tyr Val His Thr Pro Met Val Gln Phe Tyr Glu  
                   340                                  345                                  350

Thr Leu Gly Lys Asp Arg Ile Leu Glu Leu Met Gly Ala Gly Thr Leu  
                   355                                  360                                  365

Asn Lys Glu Leu Leu Asn Asp Asn His Ala Lys Ser Leu Glu Gly Lys  
                   370                                  375                                  380

Asn Arg Ser Val Glu Asp Ser Tyr Asn Gln Leu Phe Ser Val Ile Glu  
 385                                  390                                  395                                  400

Gln Val Arg Ala Gln Ser Glu Asp Ile Ser Thr Val Pro Ile His Tyr  
                                   405                                  410                                  415

Ala Tyr Asn Met Thr Arg Val Gly Arg Met Gln Met Leu Gly Lys Tyr  
                   420                                  425                                  430

Asn Pro Gln Ser Ala Lys Leu Val Arg Glu Ala Ile Leu Pro Thr Lys  
                   435                                  440                                  445

Ala Thr Leu Asp Leu Ser Asn Gln Asn Asn Glu Asp Phe Ser Ala Phe  
                   450                                  455                                  460

Gln Leu Gly Leu Ala Gln Ala Leu Asp Ile Lys Val His Thr Met Thr  
 465                                  470                                  475                                  480

Arg Glu Val Met Ser Asp Glu Leu Thr Lys Leu Leu Glu Gly Asn Leu  
                   485                                  490                                  495

Lys Pro Ala Ile Asp Met Met Val Glu Phe Asn Thr Thr Gly Ser Leu  
                   500                                  505                                  510

Pro Glu Asn Ala Val Asp Val Leu Asn Thr Ala Leu Gly Asp Arg Lys  
                   515                                  520                                  525

Ser Phe Val Ala Leu Met Ala Leu Met Glu Tyr Ser Arg Tyr Leu Val  
                   530                                  535                                  540

Ala Glu Asp Lys Ser Ala Phe Val Thr Pro Leu Tyr Val Glu Ala Asp  
 545                                  550                                  555                                  560

Gly Val Thr Asn Gly Pro Ile Asn Ala Met Met Leu Met Thr Gly Gly  
 565 570 575

Leu Phe Thr Pro Asp Trp Ile Arg Asn Ile Ala Lys Gly Gly Leu Phe  
 580 585 590

Ile Gly Ser Pro Asn Lys Thr Met Asn Glu His Arg Ser Thr Ala Asp  
 595 600 605

Asn Asn Asp Leu Tyr Gln Ala Ser Thr Asn Ala Leu Met Glu Ser Leu  
 610 615 620

Gly Lys Leu Arg Ser Asn Tyr Ala Ser Asn Met Pro Ile Gln Ser Gln  
 625 630 635 640

Ile Asp Ser Leu Leu Ser Leu Met Asp Leu Phe Leu Pro Asp Ile Asn  
 645 650 655

Leu Gly Glu Asn Gly Ala Leu Glu Leu Lys Arg Gly Ile Ala Lys Asn  
 660 665 670

Pro Leu Thr Ile Thr Ile Tyr Gly Ser Gly Ala Arg Gly Ile Ala Gly  
 675 680 685

Lys Leu Val Ser Ser Val Thr Asp Ala Ile Tyr Glu Arg Met Ser Asp  
 690 695 700

Val Leu Lys Ala Arg Ala Lys Asp Pro Asn Ile Ser Ala Ala Met Ala  
 705 710 715 720

Met Phe Gly Lys Gln Ala Ala Ser Glu Ala His Ala Glu Glu Leu Leu  
 725 730 735

Ala Arg Phe Leu Lys Asp Met Glu Thr Leu Thr Ser Thr Val Pro Val  
 740 745 750

Lys Arg Lys Gly Val Leu Glu Leu Gln Ser Thr Gly Thr Gly Ala Lys  
 755 760 765

Gly Lys Ile Asn Pro Lys Thr Tyr Thr Ile Lys Gly Glu Gln Leu Lys  
 770 775 780

Ala Leu Gln Glu Asn Met Leu His Phe Phe Val Glu Pro Leu Arg Asn  
785 790 795 800

Gly Ile Thr Gln Thr Val Gly Glu Ser Leu Val Tyr Ser Thr Glu Gln  
805 810 815

Leu Gln Lys Ala Thr Gln Ile Gln Ser Val Val Leu Glu Asp Met Phe  
820 825 830

Lys Gln Arg Val Gln Glu Lys Leu Ala Glu Lys Ala Lys Asp Pro Thr  
835 840 845

Trp Lys Lys Gly Asp Phe Leu Thr Gln Lys Glu Leu Asn Asp Ile Gln  
850 855 860

Ala Ser Leu Asn Asn Leu Ala Pro Met Ile Glu Thr Gly Ser Gln Thr  
865 870 875 880

Phe Tyr Ile Ala Gly Ser Glu Asn Ala Glu Val Ala Asn Gln Val Leu  
885 890 895

Ala Thr Asn Leu Asp Asp Arg Met Arg Val Pro Met Ser Ile Tyr Ala  
900 905 910

Pro Ala Gln Ala Gly Val Ala Gly Ile Pro Phe Met Thr Ile Gly Thr  
915 920 925

Gly Asp Gly Met Met Met Gln Thr Leu Ser Thr Met Lys Gly Ala Pro  
930 935 940

Lys Asn Thr Leu Lys Ile Phe Asp Gly Met Asn Ile Gly Leu Asn Asp  
945 950 955 960

Ile Thr Asp Ala Ser Arg Lys Ala Asn Glu Ala Val Tyr Thr Ser Trp  
965 970 975

Gln Gly Asn Pro Ile Lys Asn Val Tyr Glu Ser Tyr Ala Lys Phe Met  
980 985 990

Lys Asn Val Asp Phe Ser Lys Leu Ser Pro Glu Ala Leu Glu Ala Ile  
995 1000 1005

Gly Lys Ser Ala Leu Glu Tyr Asp Gln Arg Glu Asn Ala Thr Val  
 1010 1015 1020

Asp Asp Ile Ala Asn Ala Ala Ser Leu Ile Glu Arg Asn Leu Arg  
 1025 1030 1035

Asn Ile Ala Leu Gly Val Asp Ile Arg His Lys Val Leu Asp Lys  
 1040 1045 1050

Val Asn Leu Ser Ile Asp Gln Met Ala Ala Val Gly Ala Pro Tyr  
 1055 1060 1065

Gln Asn Asn Gly Lys Ile Asp Leu Ser Asn Met Thr Pro Glu Gln  
 1070 1075 1080

Gln Ala Asp Glu Leu Asn Lys Leu Phe Arg Glu Glu Leu Glu Ala  
 1085 1090 1095

Arg Lys Gln Lys Val Ala Lys Ala Arg  
 1100 1105

<210> 5  
 <211> 3432  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic

<400> 5  
 atgggggggtt ctcacatca tcacatcat ggtatggcta gcatgactgg tggacagcaa 60  
 atggggtcggg atctgtacga cgatgacgat aaggatccga gctcgagatc tgaaagtaca 120  
 gttacagaag aattaaaaga aggtattgat gctgtttacc cttcattggt aggtactgct 180  
 gattctaaag cagaggggtat taagaactat ttcaaattgt cctttacctt accagaagaa 240  
 cagaaatccc gtactgttgg ttcagaagca cctctaaaag atgtagccca agctctgtct 300  
 tctcgtgctc gttatgaact ctttactgag aaagaaactg ctaaccctgc ttttaatggg 360  
 gaagttatta agcgatacaa agaactcatg gaacatgggg aaggattatgc tgatattcct 420  
 cgctcccgtc tggctaagtt ccttaacact aaggatgttg gtaaactgtt tgctcaaggt 480  
 acagaagcca accgttgggt aggtggtaag ttacttaaca ttgttgagca ggatggggat 540  
 acctttaagt acaacgaaca attgctacag actgctgtat tagcaggtct tcaatggaga 600

cttactgcta	ccagcaatac	tgctatcaaa	gatgcaaaag	atgttgctgc	tattactggg	660
attgaccaag	ctctgctgcc	agaagggttta	gtagagcaat	ttgatactgg	tatgacactc	720
actgaagcag	ttagttccct	ggctcagaaa	attgagtcct	actggggatt	atctcgtaat	780
ccaaatgctc	cattgggcta	taccaaaggc	atccctacag	caatggctgc	tgaaattctg	840
gctgcatttg	tagagtctac	tgatgttgta	gagaacatcg	tggatatgtc	agaaattgac	900
ccagataaca	agaagactat	tgggtctgtac	accattactg	aactggattc	cttcgaccca	960
attaatagct	tccctactgc	tattgaagaa	gctgttttag	tgaatcctac	agagaagatg	1020
ttctttgggtg	atgacattcc	tctgtagct	aatactcagc	ttcgtaaccc	tgctgttcgt	1080
aatactccag	aacagaaggc	tgcattgaaa	gcagagcagg	ctacagagtt	ctatgtacac	1140
acccaatgg	ttcaattcta	tgagacgtta	ggtaaagacc	gtattctcga	actgatgggt	1200
gctggactc	tgaataaaga	gttacttaat	gataaccatg	ctaaatctct	ggaaggtaag	1260
aaccgttcag	tagaggactc	ttacaaccaa	ctgttctccg	tcattgagca	ggtaagagca	1320
cagagcgaag	acatctctac	tgtacctatt	cactatgcat	acaatatgac	ccgtgttggt	1380
cgtatgcaga	tgtaggtaa	atacaatcct	caatcagcca	aactggttcg	tgaggccatc	1440
ttacctacta	aagctacttt	ggattttatcg	aaccagaaca	atgaagactt	ctctgcattc	1500
cagttagggtc	tggctcaggc	attggacatt	aaagtccata	ctatgactcg	tgaggttatg	1560
tctgacgagt	tgactaaatt	actggaagg	aatctgaaac	cagccattga	tatgatgggt	1620
gagttaata	ccactgggtc	cttaccagaa	aacgcagttg	atgttctgaa	tacagcatta	1680
ggagatagga	agtcattcgt	agcattgatg	gctcttatgg	agtattccc	ttacttagta	1740
gcagaggata	aatctgcatt	tgtaactcca	ctgtatgtag	aagcagatgg	tgttactaat	1800
ggccaatca	atgccatgat	gctaatagaca	ggcgggtctgt	ttactcctga	ctggattcgt	1860
aatattgcca	aagggggc	gttcattgg	tctccaaata	agaccatgaa	tgagcatcgc	1920
tctactgctg	acaataatga	tttatatcaa	gcacccacta	atgctttgat	ggaatcggtg	1980
ggtaagttac	gtagtaacta	tgcttcta	atgcctattc	agtctcagat	agacagtctt	2040
ctttctctga	tggatttggt	tttaccggat	attaatcttg	gtgagaatgg	tgctttagaa	2100
cttaaacgtg	gtattgctaa	gaacccactg	actattacca	tctatgggtc	tggtgctcgt	2160
ggatttgcag	gtaagctgg	tagttctgt	actgatgcc	tctatgagcg	tatgtctgat	2220
gtactgaaag	ctcgtgctaa	agacccaaat	atctctgctg	ctatggcaat	gtttggtaag	2280
caagctgctt	cagaagcaca	tgctgaagaa	cttcttgccc	gtttcctgaa	agatatggaa	2340



```

acactgactt ctactgttcc tgttaaactg aaaggtgtac tggaactaca atccacaggt 2400
acaggagcca aaggaaaaat caatcctaag acctatacca ttaagggcga gcaactgaag 2460
gcacttcagg aaaatatgct gcacttcttt gtagaaccac tacgtaatgg tattactcag 2520
actgtaggtg aaagtctggt gtactctact gaacaattac agaaagctac tcagattcaa 2580
tctgtagtgc tggaagatat gttcaaacag cgagtacaag agaagctggc agagaaggct 2640
aaagacccaa catggaagaa aggtgatttc cttactcaga aagaactgaa tgatattcag 2700
gcttctctga ataacttagc ccctatgatt gagactgggt ctcagacttt ctacattgct 2760
ggttcagaaa atgcagaagt agcaaatcag gtattagcta ctaaccttga tgaccgtatg 2820
cgtgtaccaa tgagtatcta tgctccagca caggccggtg tagcagggtat tccatttatg 2880
actattggta ctggtgatgg catgatgatg caaactcttt ccactatgaa aggtgcacca 2940
aagaataccc tcaaaatctt tgatggatat aacattgggt tgaatgacat cactgatgcc 3000
agtcgtaaag ctaatgaagc tgtttacact tcttggcagg gtaaccctat taagaatggt 3060
tatgaatcat atgctaagtt catgaagaat gtagatttca gcaagctgtc ccctgaagca 3120
ttggaagcaa ttggtaaatc tgctctggaa tatgaccaac gtgagaatgc tactgtagat 3180
gatattgcta acgctgcata tctgattgaa cgtaacttac gtaatattgc actgggtgta 3240
gatattcgta ataagggtgct ggataaggta aatctgtcca ttgaccagat ggctgctgta 3300
gggtgctcctt atcagaacaa cggtgaagatt gacctcagca atatgacccc tgaacaacag 3360
gctgatgaac tgaataaact tttccgtgaa gagttagaag cccgtaaaca aaaagtcgct 3420
aaggctaggt aa 3432

```

```

<210> 6
<211> 1143
<212> PRT
<213> Artificial Sequence

```

```

<220>
<223> Synthetic

```

```

<400> 6

```

```

Met Gly Gly Ser His His His His His His Gly Met Ala Ser Met Thr
1           5           10           15

```

```

Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp Lys Asp
          20           25           30

```

Pro Ser Ser Arg Ser Glu Ser Thr Val Thr Glu Glu Leu Lys Glu Gly  
           35                          40                          45

Ile Asp Ala Val Tyr Pro Ser Leu Val Gly Thr Ala Asp Ser Lys Ala  
       50                          55                          60

Glu Gly Ile Lys Asn Tyr Phe Lys Leu Ser Phe Thr Leu Pro Glu Glu  
   65                          70                          75                          80

Gln Lys Ser Arg Thr Val Gly Ser Glu Ala Pro Leu Lys Asp Val Ala  
                           85                          90                          95

Gln Ala Leu Ser Ser Arg Ala Arg Tyr Glu Leu Phe Thr Glu Lys Glu  
                           100                          105                          110

Thr Ala Asn Pro Ala Phe Asn Gly Glu Val Ile Lys Arg Tyr Lys Glu  
       115                          120                          125

Leu Met Glu His Gly Glu Gly Ile Ala Asp Ile Leu Arg Ser Arg Leu  
   130                          135                          140

Ala Lys Phe Leu Asn Thr Lys Asp Val Gly Lys Arg Phe Ala Gln Gly  
  145                          150                          155                          160

Thr Glu Ala Asn Arg Trp Val Gly Gly Lys Leu Leu Asn Ile Val Glu  
                           165                          170                          175

Gln Asp Gly Asp Thr Phe Lys Tyr Asn Glu Gln Leu Leu Gln Thr Ala  
                           180                          185                          190

Val Leu Ala Gly Leu Gln Trp Arg Leu Thr Ala Thr Ser Asn Thr Ala  
       195                          200                          205

Ile Lys Asp Ala Lys Asp Val Ala Ala Ile Thr Gly Ile Asp Gln Ala  
   210                          215                          220

Leu Leu Pro Glu Gly Leu Val Glu Gln Phe Asp Thr Gly Met Thr Leu  
  225                          230                          235                          240

Thr Glu Ala Val Ser Ser Leu Ala Gln Lys Ile Glu Ser Tyr Trp Gly  
                           245                          250                          255

Leu Ser Arg Asn Pro Asn Ala Pro Leu Gly Tyr Thr Lys Gly Ile Pro  
 260 265 270

Thr Ala Met Ala Ala Glu Ile Leu Ala Ala Phe Val Glu Ser Thr Asp  
 275 280 285

Val Val Glu Asn Ile Val Asp Met Ser Glu Ile Asp Pro Asp Asn Lys  
 290 295 300

Lys Thr Ile Gly Leu Tyr Thr Ile Thr Glu Leu Asp Ser Phe Asp Pro  
 305 310 315 320

Ile Asn Ser Phe Pro Thr Ala Ile Glu Glu Ala Val Leu Val Asn Pro  
 325 330 335

Thr Glu Lys Met Phe Phe Gly Asp Asp Ile Pro Pro Val Ala Asn Thr  
 340 345 350

Gln Leu Arg Asn Pro Ala Val Arg Asn Thr Pro Glu Gln Lys Ala Ala  
 355 360 365

Leu Lys Ala Glu Gln Ala Thr Glu Phe Tyr Val His Thr Pro Met Val  
 370 375 380

Gln Phe Tyr Glu Thr Leu Gly Lys Asp Arg Ile Leu Glu Leu Met Gly  
 385 390 395 400

Ala Gly Thr Leu Asn Lys Glu Leu Leu Asn Asp Asn His Ala Lys Ser  
 405 410 415

Leu Glu Gly Lys Asn Arg Ser Val Glu Asp Ser Tyr Asn Gln Leu Phe  
 420 425 430

Ser Val Ile Glu Gln Val Arg Ala Gln Ser Glu Asp Ile Ser Thr Val  
 435 440 445

Pro Ile His Tyr Ala Tyr Asn Met Thr Arg Val Gly Arg Met Gln Met  
 450 455 460

Leu Gly Lys Tyr Asn Pro Gln Ser Ala Lys Leu Val Arg Glu Ala Ile  
 465 470 475 480

Leu Pro Thr Lys Ala Thr Leu Asp Leu Ser Asn Gln Asn Asn Glu Asp  
 485 490 495

Phe Ser Ala Phe Gln Leu Gly Leu Ala Gln Ala Leu Asp Ile Lys Val  
 500 505 510

His Thr Met Thr Arg Glu Val Met Ser Asp Glu Leu Thr Lys Leu Leu  
 515 520 525

Glu Gly Asn Leu Lys Pro Ala Ile Asp Met Met Val Glu Phe Asn Thr  
 530 535 540

Thr Gly Ser Leu Pro Glu Asn Ala Val Asp Val Leu Asn Thr Ala Leu  
 545 550 555 560

Gly Asp Arg Lys Ser Phe Val Ala Leu Met Ala Leu Met Glu Tyr Ser  
 565 570 575

Arg Tyr Leu Val Ala Glu Asp Lys Ser Ala Phe Val Thr Pro Leu Tyr  
 580 585 590

Val Glu Ala Asp Gly Val Thr Asn Gly Pro Ile Asn Ala Met Met Leu  
 595 600 605

Met Thr Gly Gly Leu Phe Thr Pro Asp Trp Ile Arg Asn Ile Ala Lys  
 610 615 620

Gly Gly Leu Phe Ile Gly Ser Pro Asn Lys Thr Met Asn Glu His Arg  
 625 630 635 640

Ser Thr Ala Asp Asn Asn Asp Leu Tyr Gln Ala Ser Thr Asn Ala Leu  
 645 650 655

Met Glu Ser Leu Gly Lys Leu Arg Ser Asn Tyr Ala Ser Asn Met Pro  
 660 665 670

Ile Gln Ser Gln Ile Asp Ser Leu Leu Ser Leu Met Asp Leu Phe Leu  
 675 680 685

Pro Asp Ile Asn Leu Gly Glu Asn Gly Ala Leu Glu Leu Lys Arg Gly  
 690 695 700

Ile Ala Lys Asn Pro Leu Thr Ile Thr Ile Tyr Gly Ser Gly Ala Arg  
 705 710 715 720

Gly Ile Ala Gly Lys Leu Val Ser Ser Val Thr Asp Ala Ile Tyr Glu  
 725 730 735

Arg Met Ser Asp Val Leu Lys Ala Arg Ala Lys Asp Pro Asn Ile Ser  
 740 745 750

Ala Ala Met Ala Met Phe Gly Lys Gln Ala Ala Ser Glu Ala His Ala  
 755 760 765

Glu Glu Leu Leu Ala Arg Phe Leu Lys Asp Met Glu Thr Leu Thr Ser  
 770 775 780

Thr Val Pro Val Lys Arg Lys Gly Val Leu Glu Leu Gln Ser Thr Gly  
 785 790 795 800

Thr Gly Ala Lys Gly Lys Ile Asn Pro Lys Thr Tyr Thr Ile Lys Gly  
 805 810 815

Glu Gln Leu Lys Ala Leu Gln Glu Asn Met Leu His Phe Phe Val Glu  
 820 825 830

Pro Leu Arg Asn Gly Ile Thr Gln Thr Val Gly Glu Ser Leu Val Tyr  
 835 840 845

Ser Thr Glu Gln Leu Gln Lys Ala Thr Gln Ile Gln Ser Val Val Leu  
 850 855 860

Glu Asp Met Phe Lys Gln Arg Val Gln Glu Lys Leu Ala Glu Lys Ala  
 865 870 875 880

Lys Asp Pro Thr Trp Lys Lys Gly Asp Phe Leu Thr Gln Lys Glu Leu  
 885 890 895

Asn Asp Ile Gln Ala Ser Leu Asn Asn Leu Ala Pro Met Ile Glu Thr  
 900 905 910

Gly Ser Gln Thr Phe Tyr Ile Ala Gly Ser Glu Asn Ala Glu Val Ala  
 915 920 925

Asn Gln Val Leu Ala Thr Asn Leu Asp Asp Arg Met Arg Val Pro Met  
 930 935 940

Ser Ile Tyr Ala Pro Ala Gln Ala Gly Val Ala Gly Ile Pro Phe Met  
 945 950 955 960

Thr Ile Gly Thr Gly Asp Gly Met Met Met Gln Thr Leu Ser Thr Met  
 965 970 975

Lys Gly Ala Pro Lys Asn Thr Leu Lys Ile Phe Asp Gly Met Asn Ile  
 980 985 990

Gly Leu Asn Asp Ile Thr Asp Ala Ser Arg Lys Ala Asn Glu Ala Val  
 995 1000 1005

Tyr Thr Ser Trp Gln Gly Asn Pro Ile Lys Asn Val Tyr Glu Ser  
 1010 1015 1020

Tyr Ala Lys Phe Met Lys Asn Val Asp Phe Ser Lys Leu Ser Pro  
 1025 1030 1035

Glu Ala Leu Glu Ala Ile Gly Lys Ser Ala Leu Glu Tyr Asp Gln  
 1040 1045 1050

Arg Glu Asn Ala Thr Val Asp Asp Ile Ala Asn Ala Ala Ser Leu  
 1055 1060 1065

Ile Glu Arg Asn Leu Arg Asn Ile Ala Leu Gly Val Asp Ile Arg  
 1070 1075 1080

His Lys Val Leu Asp Lys Val Asn Leu Ser Ile Asp Gln Met Ala  
 1085 1090 1095

Ala Val Gly Ala Pro Tyr Gln Asn Asn Gly Lys Ile Asp Leu Ser  
 1100 1105 1110

Asn Met Thr Pro Glu Gln Gln Ala Asp Glu Leu Asn Lys Leu Phe  
 1115 1120 1125

Arg Glu Glu Leu Glu Ala Arg Lys Gln Lys Val Ala Lys Ala Arg  
 1130 1135 1140

<210> 7  
 <211> 3432  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic

<400> 7  
 atgggggggtt ctcatcatca tcatcatcat ggtatggcta gcatgactgg tggacagcaa 60  
 atggggtcggg atctgtacga cgatgacgat aaggatccga gctcgagatc tgaaagtaca 120  
 gttacagaag aattaaaaga aggtattgat gctgtttacc cttcattggg aggtactgct 180  
 gattctaaag cagaggggtat taagaactat ttcaaattgt cctttacctt accagaagaa 240  
 cagaaatccc gtactgttgg ttcagaagca cctctaaaag atgtagccca agctctgtct 300  
 tctcgtgctc gttatgaact ctttactgag aaagaaactg ctaaccctgc ttttaatggg 360  
 gaagttatta agcgatacaa agaactcatg gaacatgggg aagggtattgc tgatattctt 420  
 cgctcccgtc tggctaagtt ccttaacact aaggatgttg gtaaacgttt tgctcaaggt 480  
 acagaagcca accggtgggt aggtggtaag ttacttaaca ttggtgagca ggatggggat 540  
 acctttaagt acaacgaaca attgctacag actgctgtat tagcaggtct tcaatggaga 600  
 cttactgcta ccagcaatac tgctatcaaa gatgcaaaag atgttgctgc tattactggt 660  
 attgaccaag ctctgctgcc agaaggttta gtagagcaat ttgatactgg tatgacactc 720  
 actgaagcag ttagttccct ggctcagaaa attgagtctt actggggatt atctcgtaat 780  
 ccaaagtctc cattgggcta taccaaaggc atccctacag caatggctgc tgaaattctg 840  
 gctgcatttg tagagtctac tgatgttgta gagaacatcg tggatatgtc agaaattgac 900  
 ccagataaca agaagactat tggctgttac accattactg aactggattc cttcgaccca 960  
 attaatagct tccctactgc tattgaagaa gctgttttag tgaatcctac agagaagatg 1020  
 ttctttgggtg atgacattcc tctgtagct aatactcagc ttcgtaacct tgctgttcgt 1080  
 aatactccag aacagaaggc tgcattgaaa gcagagcagg ctacagagtt ctatgtacac 1140  
 accccaatgg ttcaattcta tgagacgtta ggtaaagacc gtattctcga actgatgggt 1200  
 gctggtactc tgaataaaga gttacttaat gataaccatg ctaaatctct ggaaggtaa 1260  
 aaccgttcag tagaggactc ttacaaccaa ctgttctccg tcattgagca ggtaagagca 1320  
 cagagcgaag acatctctac tgtacctatt cactatgcat acaatatgac ccgtgttggg 1380  
 cgtatgcaga tgttaggtaa atacaatcct caatcagcca aactgggttcg tgaggccatc 1440

ttacctacta aagctacttt ggattttatcg aaccagaaca atgaagactt ctctgcattc	1500
cagttagggtc tggctcaggc attggacatt aaagtccata ctatgactcg tgagggttatg	1560
tctgacgagt tgactaaatt actggaaggt aatctgaaac cagccattga tatgatgggt	1620
gagtttaata ccactgggttc cttaccagaa aacgcagttg atgttctgaa tacagcatta	1680
ggagatagga agtcattcgt agcattgatg gctcttatgg agtattcccg ttacttagta	1740
gcagaggata aatctgcatt tgtaactcca ctgtatgtag aagcagatgg tgttactaat	1800
ggccaatca atgccatgat gctaatagaca ggcggtctgt ttactcctga ctggattcgt	1860
aatattgcca aaggggggctt gttcattgggt tctccaaata agaccatgaa tgagcatcgc	1920
tctactgctg acaataatga tttatatcaa gcatccacta atgctttgat ggaatcggtg	1980
ggtaagttac gtagtaacta tgccctaat atgcctattc agtctcagat agacagtctt	2040
ctttctctga tggatttggt tttaccggat attaatcttg gtgagaatgg tgctttagaa	2100
cttaaacgtg gtattgctaa gaaccactg actattacca tcttcgggttc tgggtgctcgt	2160
ggattgacg gtaagctgggt tagttctggt actgatgcca tctatgagcg tatgtctgat	2220
gtactgaaag ctctgtgctaa agacccaaat atctctgctg ctatggcaat gtttggttaag	2280
caagctgctt cagaagcaca tgctgaagaa cttcttgccc gtttcctgaa agatatggaa	2340
acactgactt ctactgttcc tgttaaacgt aaagggtgtac tggaactaca atccacagggt	2400
acaggagcca aaggaaaaat caatcctaag acctatacca ttaagggcga gcaactgaag	2460
gcacttcagg aaaatatgct gcacttcttt gtagaaccac tacgtaatgg tattactcag	2520
actgtaggtg aaagtctgggt gtactctact gaacaattac agaaagctac tcagattcaa	2580
tctgtagtgc tggaagatat gttcaaacag cgagtacaag agaagctggc agagaaggct	2640
aaagacccaa catggaagaa aggtgatttc cttactcaga aagaactgaa tgatattcag	2700
gcttctctga ataacttagc ccctatgatt gagactgggt ctcagacttt ctacattgct	2760
ggttcagaaa atgcagaagt agcaaatcag gtattagcta ctaaccttga tgaccgtatg	2820
cgtgtaccaa tgagtatcta tgctccagca caggccgggt tagcaggat tccatttatg	2880
actattggta ctgggtgatgg catgatgatg caaactcttt ccactatgaa aggtgcacca	2940
aagaataccc tcaaaatctt tgatgggtatg aacattgggt tgaatgacat cactgatgcc	3000
agtcgtaaag ctaatgaagc tgtttacact tcttggcagg gtaaccctat taagaatgtt	3060
tatgaatcat atgctaagtt catgaagaat gtagatttca gcaagctgtc ccctgaagca	3120
ttggaagcaa ttggtaaatc tgctctggaa tatgaccaac gtgagaatgc tactgtagat	3180



gatattgcta acgctgcac tctgattgaa cgtaacttac gtaatattgc actgggtgta 3240  
gatattcgctc ataaggtgct ggataaggta aatctgtcca ttgaccagat ggctgctgta 3300  
ggctgctcctt atcagaacaa cggttaagatt gacctcagca atatgacccc tgaacaacag 3360  
gctgatgaac tgaataaaact tttccgtgaa gagttagaag cccgtaaaca aaaagtcgct 3420  
aaggctagggt aa 3432

<210> 8  
<211> 1143  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 8

Met Gly Gly Ser His His His His His His Gly Met Ala Ser Met Thr  
1 5 10 15

Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp Lys Asp  
20 25 30

Pro Ser Ser Arg Ser Glu Ser Thr Val Thr Glu Glu Leu Lys Glu Gly  
35 40 45

Ile Asp Ala Val Tyr Pro Ser Leu Val Gly Thr Ala Asp Ser Lys Ala  
50 55 60

Glu Gly Ile Lys Asn Tyr Phe Lys Leu Ser Phe Thr Leu Pro Glu Glu  
65 70 75 80

Gln Lys Ser Arg Thr Val Gly Ser Glu Ala Pro Leu Lys Asp Val Ala  
85 90 95

Gln Ala Leu Ser Ser Arg Ala Arg Tyr Glu Leu Phe Thr Glu Lys Glu  
100 105 110

Thr Ala Asn Pro Ala Phe Asn Gly Glu Val Ile Lys Arg Tyr Lys Glu  
115 120 125

Leu Met Glu His Gly Glu Gly Ile Ala Asp Ile Leu Arg Ser Arg Leu  
130 135 140

Ala Lys Phe Leu Asn Thr Lys Asp Val Gly Lys Arg Phe Ala Gln Gly  
 145 150 155 160  
 Thr Glu Ala Asn Arg Trp Val Gly Gly Lys Leu Leu Asn Ile Val Glu  
 165 170 175  
 Gln Asp Gly Asp Thr Phe Lys Tyr Asn Glu Gln Leu Leu Gln Thr Ala  
 180 185 190  
 Val Leu Ala Gly Leu Gln Trp Arg Leu Thr Ala Thr Ser Asn Thr Ala  
 195 200 205  
 Ile Lys Asp Ala Lys Asp Val Ala Ala Ile Thr Gly Ile Asp Gln Ala  
 210 215 220  
 Leu Leu Pro Glu Gly Leu Val Glu Gln Phe Asp Thr Gly Met Thr Leu  
 225 230 235 240  
 Thr Glu Ala Val Ser Ser Leu Ala Gln Lys Ile Glu Ser Tyr Trp Gly  
 245 250 255  
 Leu Ser Arg Asn Pro Asn Ala Pro Leu Gly Tyr Thr Lys Gly Ile Pro  
 260 265 270  
 Thr Ala Met Ala Ala Glu Ile Leu Ala Ala Phe Val Glu Ser Thr Asp  
 275 280 285  
 Val Val Glu Asn Ile Val Asp Met Ser Glu Ile Asp Pro Asp Asn Lys  
 290 295 300  
 Lys Thr Ile Gly Leu Tyr Thr Ile Thr Glu Leu Asp Ser Phe Asp Pro  
 305 310 315 320  
 Ile Asn Ser Phe Pro Thr Ala Ile Glu Glu Ala Val Leu Val Asn Pro  
 325 330 335  
 Thr Glu Lys Met Phe Phe Gly Asp Asp Ile Pro Pro Val Ala Asn Thr  
 340 345 350  
 Gln Leu Arg Asn Pro Ala Val Arg Asn Thr Pro Glu Gln Lys Ala Ala  
 355 360 365

Leu Lys Ala Glu Gln Ala Thr Glu Phe Tyr Val His Thr Pro Met Val  
 370 375 380

Gln Phe Tyr Glu Thr Leu Gly Lys Asp Arg Ile Leu Glu Leu Met Gly  
 385 390 395 400

Ala Gly Thr Leu Asn Lys Glu Leu Leu Asn Asp Asn His Ala Lys Ser  
 405 410 415

Leu Glu Gly Lys Asn Arg Ser Val Glu Asp Ser Tyr Asn Gln Leu Phe  
 420 425 430

Ser Val Ile Glu Gln Val Arg Ala Gln Ser Glu Asp Ile Ser Thr Val  
 435 440 445

Pro Ile His Tyr Ala Tyr Asn Met Thr Arg Val Gly Arg Met Gln Met  
 450 455 460

Leu Gly Lys Tyr Asn Pro Gln Ser Ala Lys Leu Val Arg Glu Ala Ile  
 465 470 475 480

Leu Pro Thr Lys Ala Thr Leu Asp Leu Ser Asn Gln Asn Asn Glu Asp  
 485 490 495

Phe Ser Ala Phe Gln Leu Gly Leu Ala Gln Ala Leu Asp Ile Lys Val  
 500 505 510

His Thr Met Thr Arg Glu Val Met Ser Asp Glu Leu Thr Lys Leu Leu  
 515 520 525

Glu Gly Asn Leu Lys Pro Ala Ile Asp Met Met Val Glu Phe Asn Thr  
 530 535 540

Thr Gly Ser Leu Pro Glu Asn Ala Val Asp Val Leu Asn Thr Ala Leu  
 545 550 555 560

Gly Asp Arg Lys Ser Phe Val Ala Leu Met Ala Leu Met Glu Tyr Ser  
 565 570 575

Arg Tyr Leu Val Ala Glu Asp Lys Ser Ala Phe Val Thr Pro Leu Tyr  
 580 585 590

Val	Glu	Ala	Asp	Gly	Val	Thr	Asn	Gly	Pro	Ile	Asn	Ala	Met	Met	Leu
	595						600					605			
Met	Thr	Gly	Gly	Leu	Phe	Thr	Pro	Asp	Trp	Ile	Arg	Asn	Ile	Ala	Lys
	610					615					620				
Gly	Gly	Leu	Phe	Ile	Gly	Ser	Pro	Asn	Lys	Thr	Met	Asn	Glu	His	Arg
625					630					635					640
Ser	Thr	Ala	Asp	Asn	Asn	Asp	Leu	Tyr	Gln	Ala	Ser	Thr	Asn	Ala	Leu
				645					650					655	
Met	Glu	Ser	Leu	Gly	Lys	Leu	Arg	Ser	Asn	Tyr	Ala	Ser	Asn	Met	Pro
			660					665					670		
Ile	Gln	Ser	Gln	Ile	Asp	Ser	Leu	Leu	Ser	Leu	Met	Asp	Leu	Phe	Leu
			675				680						685		
Pro	Asp	Ile	Asn	Leu	Gly	Glu	Asn	Gly	Ala	Leu	Glu	Leu	Lys	Arg	Gly
	690					695					700				
Ile	Ala	Lys	Asn	Pro	Leu	Thr	Ile	Thr	Ile	Phe	Gly	Ser	Gly	Ala	Arg
705					710					715					720
Gly	Ile	Ala	Gly	Lys	Leu	Val	Ser	Ser	Val	Thr	Asp	Ala	Ile	Tyr	Glu
				725					730					735	
Arg	Met	Ser	Asp	Val	Leu	Lys	Ala	Arg	Ala	Lys	Asp	Pro	Asn	Ile	Ser
			740					745					750		
Ala	Ala	Met	Ala	Met	Phe	Gly	Lys	Gln	Ala	Ala	Ser	Glu	Ala	His	Ala
		755					760					765			
Glu	Glu	Leu	Leu	Ala	Arg	Phe	Leu	Lys	Asp	Met	Glu	Thr	Leu	Thr	Ser
	770					775					780				
Thr	Val	Pro	Val	Lys	Arg	Lys	Gly	Val	Leu	Glu	Leu	Gln	Ser	Thr	Gly
785					790					795					800
Thr	Gly	Ala	Lys	Gly	Lys	Ile	Asn	Pro	Lys	Thr	Tyr	Thr	Ile	Lys	Gly
				805					810					815	

Glu Gln Leu Lys Ala Leu Gln Glu Asn Met Leu His Phe Phe Val Glu  
820 825 830

Pro Leu Arg Asn Gly Ile Thr Gln Thr Val Gly Glu Ser Leu Val Tyr  
835 840 845

Ser Thr Glu Gln Leu Gln Lys Ala Thr Gln Ile Gln Ser Val Val Leu  
850 855 860

Glu Asp Met Phe Lys Gln Arg Val Gln Glu Lys Leu Ala Glu Lys Ala  
865 870 875 880

Lys Asp Pro Thr Trp Lys Lys Gly Asp Phe Leu Thr Gln Lys Glu Leu  
885 890 895

Asn Asp Ile Gln Ala Ser Leu Asn Asn Leu Ala Pro Met Ile Glu Thr  
900 905 910

Gly Ser Gln Thr Phe Tyr Ile Ala Gly Ser Glu Asn Ala Glu Val Ala  
915 920 925

Asn Gln Val Leu Ala Thr Asn Leu Asp Asp Arg Met Arg Val Pro Met  
930 935 940

Ser Ile Tyr Ala Pro Ala Gln Ala Gly Val Ala Gly Ile Pro Phe Met  
945 950 955 960

Thr Ile Gly Thr Gly Asp Gly Met Met Met Gln Thr Leu Ser Thr Met  
965 970 975

Lys Gly Ala Pro Lys Asn Thr Leu Lys Ile Phe Asp Gly Met Asn Ile  
980 985 990

Gly Leu Asn Asp Ile Thr Asp Ala Ser Arg Lys Ala Asn Glu Ala Val  
995 1000 1005

Tyr Thr Ser Trp Gln Gly Asn Pro Ile Lys Asn Val Tyr Glu Ser  
1010 1015 1020

Tyr Ala Lys Phe Met Lys Asn Val Asp Phe Ser Lys Leu Ser Pro  
1025 1030 1035

Glu Ala Leu Glu Ala Ile Gly Lys Ser Ala Leu Glu Tyr Asp Gln  
 1040 1045 1050

Arg Glu Asn Ala Thr Val Asp Asp Ile Ala Asn Ala Ala Ser Leu  
 1055 1060 1065

Ile Glu Arg Asn Leu Arg Asn Ile Ala Leu Gly Val Asp Ile Arg  
 1070 1075 1080

His Lys Val Leu Asp Lys Val Asn Leu Ser Ile Asp Gln Met Ala  
 1085 1090 1095

Ala Val Gly Ala Pro Tyr Gln Asn Asn Gly Lys Ile Asp Leu Ser  
 1100 1105 1110

Asn Met Thr Pro Glu Gln Gln Ala Asp Glu Leu Asn Lys Leu Phe  
 1115 1120 1125

Arg Glu Glu Leu Glu Ala Arg Lys Gln Lys Val Ala Lys Ala Arg  
 1130 1135 1140

<210> 9  
 <211> 69  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic

<400> 9  
 tcccagacaa aagggttaaga tttcatcacag gattggatgc attacttcat ccaaaagaag 60  
 cggagcttc 69

<210> 10  
 <211> 69  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic

<400> 10  
 tgggagagaa aagggttaaga tttgatagag gattggatgg attagttgat ggaaaagaag 60  
 cggagcttc 69

<210> 11  
 <211> 69  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Synthetic  
  
 <400> 11  
 tccctgtcctt ttggttttgt tttctttctg gtttggttgc ttttcttctt ccaaaagaag 60  
 cggagcttc 69  
  
 <210> 12  
 <211> 69  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Synthetic  
  
 <400> 12  
 tcccacacaa aaccttaaca tttcatcac cattccatcc attacttcat ccaaaagaag 60  
 cggagcttc 69  
  
 <210> 13  
 <211> 69  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Synthetic  
  
 <400> 13  
 acccagacaa aaggaaaaga aaacaaacag gaaaggaagc aaaacaacaa ccaaaagaag 60  
 cggagcttc 69  
  
 <210> 14  
 <211> 10617  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Synthetic  
  
 <400> 14  
 atgggggggtt ctcacatca tcatcatcat ggtatggcta gcatgactgg tggacagcaa 60  
 atgggtcggg atctgtacga cgatgacgat aaggatccga gctcgagatc tatgtcagta 120  
 tttgatagac tggctggggtt cgacagacagc gtaaccaatg caaagcaagt tgacgtctct 180

actgcaaccg	cccagaagaa	agctgaacaa	ggtgtcacta	ctcctcttgt	ttctcctgat	240
gctgcttatc	aaatgcaagc	tgcccgtact	ggtaatgttg	gggctaatagc	atttgaacca	300
gggacagtgc	aatcagat	catgaatctg	acccaatgc	aatcatgaa	taagtatggg	360
gttgagcaag	gcttacaact	tatcaatgct	cgtgctgatg	cagggaaacca	ggtattcaat	420
gattcagtta	ctacaagaac	tcctggggaa	gaactggggg	atattgctac	tggtggtggc	480
cttggttttg	ttaataccct	tgggggcatt	ggtgctcttg	gggcaggctt	actcaacgat	540
gatgcagg	ctggtgttgc	tcaacaattg	agtaagt	atgatgctgt	tcatgctacc	600
caaagccagg	cattacaaga	taaacgtaag	ctctttgctg	ctcgtaactt	aatgaatgaa	660
gtagagagt	aacgtcagta	tcaaacagat	aagaaagaag	gcactaatga	catagtagct	720
tccttatcta	aatttggacg	tgattttgta	ggttcaattg	agaatgctgc	tcaaactgac	780
tctattat	ctgatgggtt	agcagaagg	gtaggttctc	tattagg	tggtcctgta	840
ttaaggggtg	catctttact	gggtaaagca	gttggtccag	caaatactct	tcgtagtgtc	900
gcattggctg	gtgctattga	tgcagg	ggtactcagt	cactggctcg	tattgcctct	960
actgtaggta	gagctgcacc	gggtatggtt	ggtgttggtg	caatggaagc	tggtggtgca	1020
taccaacaaa	ctgctgatga	aattatgaag	atgagtctta	aagacttaga	gaagtctcct	1080
gtttatcagc	aacatattaa	agatgg	tcccctgaac	aggctcg	tcagactgca	1140
tctgaaactg	gtcttactgc	tgctgctatt	caattaccta	ttgctgctgc	aaccggctcct	1200
ctggtatccc	gttttgagat	ggctcctttc	cgtgctggct	ctttagg	tgtaggtatg	1260
aaccttgccc	gtgaaacagt	ggaagaagg	gttcaggg	ctacaggcca	actggctcag	1320
aatattgcac	agcaacaaaa	cattgataag	aaccaagacc	tgcttaaagg	tgctcgg	1380
caggctgggt	taggtgctct	ttatggcttt	ggttctgctg	gtgttg	ggctccggct	1440
ggtgctgctc	gttttagcagg	tgctgcaact	gctcctgtat	tgctg	aatggctgg	1500
gttaaagctg	ctggtagtgt	agcaggtaag	gttg	ctattaagaa	tacttttagta	1560
gctcgtgg	aacgggttat	gaagcagaat	gaagaagcat	ctcctgttgc	tgatgactat	1620
gttgcacagg	cagcacaaga	agctatggct	caagcaccag	aagcagaagt	tactattcgt	1680
gatgctgttg	aagcaactga	tgctactcca	gaacagaaag	ttgcagcaca	ccagtatg	1740
tctgacttaa	tgaatgctac	tcgtttta	cctgaaaatt	atcaggaagc	accagagcat	1800
attcgtaatg	ctgtagctgg	ttctactgac	caagtacagg	ttattcagaa	gtagcagac	1860
ttagttaaca	cattagatga	atcta	caagcactga	tggaagctgc	atcttatatg	1920



tatgatgctg	tttcagagtt	tgagcagttc	attaaccgtg	accctgctgc	actggatagc	1980
attcctaaag	attctccggc	tattgagtta	ctcaaccgtt	atacgaatct	gacagctaata	2040
attcagaaca	cacccaaaagt	aattgggtgca	ctgaatgtta	ttaatcgaat	gattaatgaa	2100
tctgctcaga	atgggttcttt	gaatgtgact	gaagaatcca	gtccacagga	aatgcagaac	2160
gtagcattag	ctgctgaagt	agccccctgaa	aagctcaatc	cagagtctgt	aaatgttggt	2220
cttaaacaatg	ctgctgatgg	tcgtattaaa	ctgaataatc	gccagattgc	tgccctccag	2280
aatgctgctg	caatcctgaa	gggggcacgg	gaatatgatg	cagaagctgc	ccgtcttgga	2340
ttacgtcctc	aagacattgt	gagtaaacag	attaaaacgg	atgagagcag	aactcaggaa	2400
ggacaataact	ctgcgttgca	acatgcgaat	aggattccgg	ctgcgtataa	ctctggtaata	2460
ttcgagttgg	cctccgctta	cctgaacgac	tttatgcagt	tcgcccagca	catgcagaat	2520
aaggttggag	cgttgaatga	gcattcttgtt	acgggggaatg	cggataagaa	taagtctgtc	2580
cactaccaag	ctcttactgc	tgacagagaa	tgggttcgta	gccgtaccgg	attgggggtc	2640
aatccctatg	acactaagtc	ggttaaattt	gccagcaag	ttgctcttga	agcgaaaacg	2700
gtagcggata	ttgctaatagc	cctccgcttcg	gcttaccocgg	aactgaaggt	cagtcataata	2760
aaagttactc	cattggattc	acgtcttaac	gctcctgctg	ctgaggtggg	caaggcattc	2820
cgtcaaggca	atcgagacgt	tgcttcttct	caaccgaaag	ctgactccgt	gaatcagggt	2880
aaagaaaactc	ctgttacaaa	acaggaacca	gttacatcta	ctgtacagac	taagactcct	2940
gttagtgaat	ctgttaaaac	agaacctact	actaaagagt	ctagcccaca	ggctataaaa	3000
gaacctgtga	accagtctga	aaaacaggat	gttaacctta	ctaatgagga	caacatcaag	3060
caacctactg	aatctgttaa	agaaactgaa	acttctacaa	aagaaagtac	agttacagaa	3120
gaattaaaag	aaggatttga	tgctgtttac	ccttcattgg	taggtactgc	tgattctaaa	3180
gcagagggta	ttaagaacta	tttcaaattg	tcctttacct	taccagaaga	acagaaatcc	3240
cgtactgttg	gttcagaagc	acctctaaaa	gatgtagccc	aagctctgtc	ttctcgtgct	3300
cgttatgaac	tctttactga	gaaagaaact	gctaaccctg	cttttaatgg	ggaagttatt	3360
aagcgataca	aagaactcat	ggaacatggg	gaaggatttg	ctgatattct	tcgctcccgt	3420
ctggctaagt	tccttaacac	taaggatgtt	ggtaaacggt	ttgctcaagg	tacagaagcc	3480
aaccgttggg	taggtggtaa	gttacttaac	attgttgagc	aggatgggga	tacctttaag	3540
tacaacgaac	aattgctaca	gactgctgta	ttagcaggtc	ttcaatggag	acttactgct	3600
accagcaata	ctgctatcaa	agatgcaaaa	gatgttgctg	ctattactgg	tattgaccaa	3660

gctctgctgc	cagaagggtt	agtagagcaa	tttgatactg	gtatgacact	caactgaagca	3720
gtaggttccc	tggtcagaa	aattgagtct	tactggggat	tatctcgtaa	tccaaatgct	3780
ccattgggct	ataccaaagg	catccctaca	gcaatggctg	ctgaaattct	ggctgcattt	3840
gtagagtcta	ctgatgttgt	agagaacatc	gtggatatgt	cagaaattga	cccagataac	3900
aagaagacta	ttggtctgta	caccattact	gaactggatt	ccttcgaccc	aattaatagc	3960
ttccctactg	ctattgaaga	agctgtttta	gtgaatccta	cagagaagat	gttcttttgg	4020
gatgacattc	ctcctgtagc	taatactcag	cttcgtaacc	ctgctgttcg	taatactcca	4080
gaacagaagg	ctgcattgaa	agcagagcag	gtacacagat	tctatgtaca	caccccaatg	4140
gttcaattct	atgagacggt	aggtaaagac	cgtattctcg	aactgatggg	tgctgggtact	4200
ctgaataaag	agttacttaa	tgataaccat	gctaaatctc	tggaaggtaa	gaaccgttca	4260
gtagaggact	cttacaacca	actgtttctc	gtcattgagc	aggtaagagc	acagagcgaa	4320
gacatctcta	ctgtacctat	tcactatgca	tacaatatga	cccgtgttgg	tcgtatgcag	4380
atgttaggta	aatacaatcc	tcaatcagcc	aaactgggtc	gtgaggccat	cttacctact	4440
aaagctactt	tggattttatc	gaaccagaac	aatgaagact	tctctgcatt	ccagtttaggt	4500
ctggctcagg	cattggacat	taaagtccat	actatgactc	gtgagggttat	gtctgacgag	4560
ttgactaaat	tactggaagg	taatctgaaa	ccagccattg	atatgatggg	tgagtttaat	4620
accactgggt	ccttaccaga	aaacgcaggt	gatgtttctga	atacagcatt	aggagatagg	4680
aagtcattcg	tagcattgat	ggctcttatg	gagtattccc	gttacttagt	agcagaggat	4740
aaatctgcat	ttgtaactcc	actgtatgta	gaagcagatg	gtgttactaa	tggtccaatc	4800
aatgccatga	tgctaatagac	aggcgggtctg	tttactcctg	actggattcg	taatattgcc	4860
aaagggggct	tgttcattgg	ttctccaaat	aagaccatga	atgagcatcg	ctctactgct	4920
gacaataatg	atttatatca	agcatccact	aatgctttga	tggaatcggt	gggtaagtta	4980
cgtagtaact	atgcctctaa	tatgcctatt	cagtctcaga	tagacagtct	tctttctctg	5040
atggatttgt	ttttaccgga	tattaatctt	ggtgagaatg	gtgctttaga	acttaaactg	5100
ggtattgcta	agaacccact	gactattacc	atctatgggt	ctgggtgctcg	tggtattgca	5160
ggtaagctgg	ttagttctgt	tactgatgcc	atctatgagc	gtatgtctga	tgtactgaaa	5220
gctcgtgcta	aagacccaaa	tatctctgct	gctatggcaa	tgtttggtta	gcaagctgct	5280
tcagaagcac	atgctgaaga	acttcttgcc	cgtttcctga	aagatatgga	aacactgact	5340
tctactgttc	ctgttaaacy	taaagggtga	ctggaactac	aatccacagg	tacaggagcc	5400

aaaggaaaaa	tcaatcctaa	gacctatacc	attaagggcg	agcaactgaa	ggcacttcag	5460
gaaaatatgc	tgcacttctt	tgtagaacca	ctacgtaatg	gtattactca	gactgtaggt	5520
gaaagtctgg	tgtactctac	tgaacaatta	cagaaagcta	ctcagattca	atctgtagtg	5580
ctggaagata	tgttcaaaca	gcgagtacaa	gagaagctgg	cagagaaggc	taaagaccca	5640
acatggaaga	aaggtgattt	ccttactcag	aaagaactga	atgatattca	ggcttctctg	5700
aataacttag	cccctatgat	tgagactggg	tctcagactt	tctacattgc	tggttcagaa	5760
aatgcagaag	tagcaaata	ggtattagct	actaaccttg	atgaccgtat	gcgtgtacca	5820
atgagtatct	atgctccagc	acaggccggg	gtagcaggta	ttccatttat	gactattggg	5880
actggtgatg	gcatgatgat	gcaaactctt	tccactatga	aaggtgcacc	aaagaatacc	5940
ctcaaaatct	ttgatgggat	gaacattggg	ttgaatgaca	tactgatgc	cagtcgtaaa	6000
gctaataaag	ctgtttacac	ttcttggcag	ggtaacccta	ttaagaatgt	ttatgaatca	6060
tatgctaagt	tcatgaagaa	tgtagatttc	agcaagctgt	cccctgaagc	attggaagca	6120
attggtaaat	ctgctctgga	atatgaccaa	cgtgagaatg	ctactgtaga	tgatattgct	6180
aacgctgcat	ctctgattga	acgtaactta	cgtaatatgt	cactgggtgt	agatattcgt	6240
cataagggtg	tggataagg	aaatctgtcc	attgaccaga	tggctgctgt	aggtgctcct	6300
tatcagaaca	acggtaagat	tgacctcagc	aatatgaccc	ctgaacaaca	ggctgatgaa	6360
ctgaataaac	ttttccgtga	agagttagaa	gcccgtaaac	aaaaagtcgc	taaggctagg	6420
gctgaagtca	aagaagaaac	tgtttctgaa	aaagaaccag	tgaatccaga	ctttggtatg	6480
gtaggccgtg	agcataaggc	atctgggtgt	cgtatcctgt	ctgctactgc	tattcgtaat	6540
ctggctaaga	ttagtaatat	gccatctact	caggcagcta	ctcttgcgga	gattcagaaa	6600
tactggcag	ctaaagacta	taagattatc	tacggtacac	ctactcaggt	tgcagagtat	6660
gctcgtcaga	agaatgttac	tgaattgact	tctcaggaaa	tggagaagc	tcaggcaggt	6720
aatatttatg	gctggactaa	cttcgatgat	aagaccattt	atctgggttag	cccatctatg	6780
gaaacctca	ttcatgaact	ggttcatgcc	tctaccttcg	aggaagttaa	ttccttctat	6840
cagggtaatg	aagtaagccc	tacttctaag	caggctattg	agaaccttga	aggtctgatg	6900
gaacagttcc	gttctctgga	tatttccaaa	gattctccag	aaatgagaga	agcatatgct	6960
gatgctattg	caactatcga	aggtcatttg	agtaatggat	ttgttgaccc	agctatctct	7020
aaagctgctg	ctcttaatga	gtttatggct	tgggggttag	ctaaccgtgc	tcttgctgct	7080
aaacagaaga	gaacatcttc	actggttcaa	atggtgaaag	atgtttatca	ggctattaag	7140

aaattgattt	ggggacgtaa	acaagctcct	gcattgggag	aagatatgtt	ctccaatctg	7200
ctgtttaact	ctgcaattct	gatgcgtagc	caacctacaa	ctcaggcagt	agctaaagat	7260
ggcacactgt	tccatagcaa	agcatatggt	aataatgaac	gtctgtctca	gttgaaccag	7320
actttcgata	aactggtaac	tgattacctt	cgtactgacc	cagttacaga	agtagaacgt	7380
cgtggcaatg	tggctaatac	attaatgagt	gctactcgac	tggttcgtga	tgttcagtct	7440
catggcttca	atatgactgc	tcaggaacag	tctgtattcc	agatgggttac	tgctgcatta	7500
gcaactgaag	ctgcgattga	cccacatgct	atggctcgtg	ctcaggaact	ttatacccat	7560
gtaatgaaac	accttacggt	agagcatttc	atggctgacc	ctgatagtac	taaccctgct	7620
gaccgttact	atgctcaaca	gaaatatgac	accatctctg	gtgctaatac	ggttgaagta	7680
gatgccaaaag	gtagaaccag	tctgttacct	acattcctgg	gtctggctat	ggttaatgaa	7740
gaactacgtt	caatcattaa	agaaatgcct	gtacctaaag	cagataagaa	attagggat	7800
gatatagata	ctctgcttac	caatgcaggt	actcaggtaa	tggaatctct	gaaccgtcgt	7860
atggctgggtg	accagaaaagc	tactaatgtt	caggacagta	ttgatgcttt	gtcagaaaac	7920
atcatggctg	ctgctttgaa	acgagagtcc	ttctatgatg	ctgtagcaac	ccctaccggt	7980
aacttcattg	accgtgctaa	tcagtacgta	acggatagca	ttgaacggtt	atctgaaact	8040
gttattgaga	aggcagataa	ggtaattgct	aacccttcta	atatagctgc	taaagggtgtt	8100
gctcatctgg	ctaaactgac	tgctgctatt	gcactctgaa	aacaggggtga	aatagtggct	8160
caggggtgta	tgactgctat	gaaccagggg	aaagtatggc	aacctttcca	tgacttagtt	8220
aatgacattg	ttggccgtac	taagactaat	gccaatgtct	atgacttaat	caaattgggt	8280
aagagccaga	tttctcaaga	ccgtcagcaa	ttccgtgagc	atttacctac	agtcattgct	8340
ggtaagttct	ctcgtaaatt	gactgatacc	gaatggctctg	caatgcatac	tggttttaggt	8400
aaaacagatt	tagctgttct	acgtgaaact	atgagcatgg	ctgaaattag	agatttactc	8460
tcttcatcca	agaaaagtga	agatgaaatc	tctactctgg	aaaaagagat	tcagaaccaa	8520
gcaggtagaa	actggaatct	ggttcagaag	aaatctaagc	aactggctca	atacatgatt	8580
atgggggaag	taggtaataa	cctccttcgt	aatgcccattg	ctattagtcg	tttgtttaggt	8640
gaacgtatta	ctaattgggtc	tgtggcagat	gtagctgcta	ttgataagct	cattactttg	8700
tactctctgg	aattgatgaa	taagtctgac	cgtgaccttt	tgtcagaatt	ggctcaatca	8760
gaagtggaa	gtagggagtt	ctccattgct	tatatgggtg	gtcaacgtac	tgaagagatg	8820
cgtaaagcta	aaggtagata	ccgtactctg	ctgaatcact	ttaaaggcta	tatccctgta	8880

gagaaccagc	aaggtgtgaa	tttgattatt	gctgacgata	aagagtttgc	taagttaa	8940
agccaatcct	ttactcgtat	tggtacttat	caggggagca	ctggtttccg	tactggttct	9000
aaaggttatt	acttcagccc	agtagctgcc	cgtgcccctt	actctcaggg	tattcttcag	9060
aacgttcgta	atactgctgg	tggtgtggat	attgggtactg	gctttacgtt	aggcactatg	9120
gttgctgggc	gtattactga	caaaccaacc	gtagagcgta	ttaccaaagc	tctggctaaa	9180
ggtagcgctg	ggcgtgaacc	actgatgcca	atttataaca	gcaaagggtca	ggtagttgct	9240
tatgaacaat	ccgttgaccc	taatattgttg	aagcacctaa	accaagacaa	tcactttgct	9300
aagatgggtg	gtgtatggcg	tggtcgtcag	gtggaagagg	ctaaagcaca	acgtttta	9360
gacattctca	ttgagcaatt	acatgctatg	tatgagaaag	acattaaaga	ctccagtgtc	9420
aataaatctc	aatatgtaaa	cctgttaggt	aaaattgatg	accagtgact	ggctgatg	9480
attaacctga	tgaacattga	gactcgtcat	aaggccgaag	aactcttcgg	taaagatgag	9540
ttatgggttc	gtagggatat	gctgaatgat	gcacttggtc	atcgtgctgc	atctattggt	9600
gatgtgtgga	ccggtaaactc	tcgttggtca	cctagcaccc	ttgatactgt	taagaagatg	9660
ttcctcgggtg	cattcggtaa	taaggcatat	catgtagtaa	tgaatgctga	aaataccatt	9720
cagaacttag	tgaaggacgc	taagacagta	attggttgta	aatctgttgt	agtaccggca	9780
gttaacttcc	ttgctaacat	ctaccagatg	attggacgtg	gtgttcctgt	taaagatatt	9840
gctgtgaaca	ttcctcgtaa	gacgtcagag	attaatcagt	atattaaatc	tcgtttacgt	9900
cagattgatg	cggaagcaga	gctacgtgct	gctgaaggta	accctaattct	ggttcgtaaa	9960
cttaaaaactg	agattcaatc	tattactgat	agtcatcgtc	gtatgagtat	ctggcctttg	10020
attgaagcag	gtgagttctc	ttctattgct	gatgctggta	ttagtctgta	tgacctgtta	10080
gtagctgaag	gtaagattca	tgagtacatg	gaaaaacttg	ctaataaaact	tccagaaaaa	10140
gtacgtaatg	ctggccgtta	cgtctttatt	gctaaggaca	ctgctctgtt	ccagggtatc	10200
cagaaaacag	tagagtattc	agactttatt	gctaaagcca	tcattctatga	tgatttagtg	10260
aaacgtaaga	aaaaatcttc	ttctgaagca	ttaggtcagg	taactgaaga	gtttattaac	10320
tatgacagat	tgcttggtcg	tttccgtggc	tatatggaaa	gtatgggtct	gatgtgggtc	10380
tacaacttta	aaattcgttc	cattaaagtt	gctatgagca	tgattagaaa	caaccagta	10440
cattctctga	ttgtacagt	agtacctgct	cctaccatgt	ttggtaacgt	aggcttacca	10500
attcaggaca	acatgctaac	catgctggct	gaaggaagac	tggattactc	attaggcttc	10560
ggacaaggat	taagagcacc	tacctcaat	ccttggttca	accttactca	ctaataa	10617

<210> 15  
 <211> 3537  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic

<400> 15

Met Gly Gly Ser His His His His His His Gly Met Ala Ser Met Thr  
 1 5 10 15

Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp Lys Asp  
 20 25 30

Pro Ser Ser Arg Ser Met Ser Val Phe Asp Arg Leu Ala Gly Phe Ala  
 35 40 45

Asp Ser Val Thr Asn Ala Lys Gln Val Asp Val Ser Thr Ala Thr Ala  
 50 55 60

Gln Lys Lys Ala Glu Gln Gly Val Thr Thr Pro Leu Val Ser Pro Asp  
 65 70 75 80

Ala Ala Tyr Gln Met Gln Ala Ala Arg Thr Gly Asn Val Gly Ala Asn  
 85 90 95

Ala Phe Glu Pro Gly Thr Val Gln Ser Asp Phe Met Asn Leu Thr Pro  
 100 105 110

Met Gln Ile Met Asn Lys Tyr Gly Val Glu Gln Gly Leu Gln Leu Ile  
 115 120 125

Asn Ala Arg Ala Asp Ala Gly Asn Gln Val Phe Asn Asp Ser Val Thr  
 130 135 140

Thr Arg Thr Pro Gly Glu Glu Leu Gly Asp Ile Ala Thr Gly Val Gly  
 145 150 155 160

Leu Gly Phe Val Asn Thr Leu Gly Gly Ile Gly Ala Leu Gly Ala Gly  
 165 170 175

Leu Leu Asn Asp Asp Ala Gly Ala Val Val Ala Gln Gln Leu Ser Lys  
 180 185 190

Phe Asn Asp Ala Val His Ala Thr Gln Ser Gln Ala Leu Gln Asp Lys  
 195 200 205  
 Arg Lys Leu Phe Ala Ala Arg Asn Leu Met Asn Glu Val Glu Ser Glu  
 210 215 220  
 Arg Gln Tyr Gln Thr Asp Lys Lys Glu Gly Thr Asn Asp Ile Val Ala  
 225 230 235 240  
 Ser Leu Ser Lys Phe Gly Arg Asp Phe Val Gly Ser Ile Glu Asn Ala  
 245 250 255  
 Ala Gln Thr Asp Ser Ile Ile Ser Asp Gly Leu Ala Glu Gly Val Gly  
 260 265 270  
 Ser Leu Leu Gly Ala Gly Pro Val Leu Arg Gly Ala Ser Leu Leu Gly  
 275 280 285  
 Lys Ala Val Val Pro Ala Asn Thr Leu Arg Ser Ala Ala Leu Ala Gly  
 290 295 300  
 Ala Ile Asp Ala Gly Thr Gly Thr Gln Ser Leu Ala Arg Ile Ala Ser  
 305 310 315 320  
 Thr Val Gly Arg Ala Ala Pro Gly Met Val Gly Val Gly Ala Met Glu  
 325 330 335  
 Ala Gly Gly Ala Tyr Gln Gln Thr Ala Asp Glu Ile Met Lys Met Ser  
 340 345 350  
 Leu Lys Asp Leu Glu Lys Ser Pro Val Tyr Gln Gln His Ile Lys Asp  
 355 360 365  
 Gly Met Ser Pro Glu Gln Ala Arg Arg Gln Thr Ala Ser Glu Thr Gly  
 370 375 380  
 Leu Thr Ala Ala Ala Ile Gln Leu Pro Ile Ala Ala Ala Thr Gly Pro  
 385 390 395 400  
 Leu Val Ser Arg Phe Glu Met Ala Pro Phe Arg Ala Gly Ser Leu Gly  
 405 410 415  
 Ala Val Gly Met Asn Leu Ala Arg Glu Thr Val Glu Glu Gly Val Gln  
 420 425 430

Gly Ala Thr Gly Gln Leu Ala Gln Asn Ile Ala Gln Gln Gln Asn Ile  
 435 440 445

Asp Lys Asn Gln Asp Leu Leu Lys Gly Val Gly Thr Gln Ala Gly Leu  
 450 455 460

Gly Ala Leu Tyr Gly Phe Gly Ser Ala Gly Val Val Gln Ala Pro Ala  
 465 470 475 480

Gly Ala Ala Arg Leu Ala Gly Ala Ala Thr Ala Pro Val Leu Arg Thr  
 485 490 495

Thr Met Ala Gly Val Lys Ala Ala Gly Ser Val Ala Gly Lys Val Val  
 500 505 510

Ser Pro Ile Lys Asn Thr Leu Val Ala Arg Gly Glu Arg Val Met Lys  
 515 520 525

Gln Asn Glu Glu Ala Ser Pro Val Ala Asp Asp Tyr Val Ala Gln Ala  
 530 535 540

Ala Gln Glu Ala Met Ala Gln Ala Pro Glu Ala Glu Val Thr Ile Arg  
 545 550 555 560

Asp Ala Val Glu Ala Thr Asp Ala Thr Pro Glu Gln Lys Val Ala Ala  
 565 570 575

His Gln Tyr Val Ser Asp Leu Met Asn Ala Thr Arg Phe Asn Pro Glu  
 580 585 590

Asn Tyr Gln Glu Ala Pro Glu His Ile Arg Asn Ala Val Ala Gly Ser  
 595 600 605

Thr Asp Gln Val Gln Val Ile Gln Lys Leu Ala Asp Leu Val Asn Thr  
 610 615 620

Leu Asp Glu Ser Asn Pro Gln Ala Leu Met Glu Ala Ala Ser Tyr Met  
 625 630 635 640

Tyr Asp Ala Val Ser Glu Phe Glu Gln Phe Ile Asn Arg Asp Pro Ala  
 645 650 655



Ala	Leu	Asp	Ser	Ile	Pro	Lys	Asp	Ser	Pro	Ala	Ile	Glu	Leu	Leu	Asn	660	665	670	
Arg	Tyr	Thr	Asn	Leu	Thr	Ala	Asn	Ile	Gln	Asn	Thr	Pro	Lys	Val	Ile	675	680	685	
Gly	Ala	Leu	Asn	Val	Ile	Asn	Arg	Met	Ile	Asn	Glu	Ser	Ala	Gln	Asn	690	695	700	
Gly	Ser	Leu	Asn	Val	Thr	Glu	Glu	Ser	Ser	Pro	Gln	Glu	Met	Gln	Asn	705	710	715	720
Val	Ala	Leu	Ala	Ala	Glu	Val	Ala	Pro	Glu	Lys	Leu	Asn	Pro	Glu	Ser	725	730	735	
Val	Asn	Val	Val	Leu	Lys	His	Ala	Ala	Asp	Gly	Arg	Ile	Lys	Leu	Asn	740	745	750	
Asn	Arg	Gln	Ile	Ala	Ala	Leu	Gln	Asn	Ala	Ala	Ala	Ile	Leu	Lys	Gly	755	760	765	
Ala	Arg	Glu	Tyr	Asp	Ala	Glu	Ala	Ala	Arg	Leu	Gly	Leu	Arg	Pro	Gln	770	775	780	
Asp	Ile	Val	Ser	Lys	Gln	Ile	Lys	Thr	Asp	Glu	Ser	Arg	Thr	Gln	Glu	785	790	795	800
Gly	Gln	Tyr	Ser	Ala	Leu	Gln	His	Ala	Asn	Arg	Ile	Arg	Ser	Ala	Tyr	805	810	815	
Asn	Ser	Gly	Asn	Phe	Glu	Leu	Ala	Ser	Ala	Tyr	Leu	Asn	Asp	Phe	Met	820	825	830	
Gln	Phe	Ala	Gln	His	Met	Gln	Asn	Lys	Val	Gly	Ala	Leu	Asn	Glu	His	835	840	845	
Leu	Val	Thr	Gly	Asn	Ala	Asp	Lys	Asn	Lys	Ser	Val	His	Tyr	Gln	Ala	850	855	860	
Leu	Thr	Ala	Asp	Arg	Glu	Trp	Val	Arg	Ser	Arg	Thr	Gly	Leu	Gly	Val	865	870	875	880

Asn Pro Tyr Asp Thr Lys Ser Val Lys Phe Ala Gln Gln Val Ala Leu  
885 890 895

Glu Ala Lys Thr Val Ala Asp Ile Ala Asn Ala Leu Ala Ser Ala Tyr  
900 905 910

Pro Glu Leu Lys Val Ser His Ile Lys Val Thr Pro Leu Asp Ser Arg  
915 920 925

Leu Asn Ala Pro Ala Ala Glu Val Val Lys Ala Phe Arg Gln Gly Asn  
930 935 940

Arg Asp Val Ala Ser Ser Gln Pro Lys Ala Asp Ser Val Asn Gln Val  
945 950 955 960

Lys Glu Thr Pro Val Thr Lys Gln Glu Pro Val Thr Ser Thr Val Gln  
965 970 975

Thr Lys Thr Pro Val Ser Glu Ser Val Lys Thr Glu Pro Thr Thr Lys  
980 985 990

Glu Ser Ser Pro Gln Ala Ile Lys Glu Pro Val Asn Gln Ser Glu Lys  
995 1000 1005

Gln Asp Val Asn Leu Thr Asn Glu Asp Asn Ile Lys Gln Pro Thr  
1010 1015 1020

Glu Ser Val Lys Glu Thr Glu Thr Ser Thr Lys Glu Ser Thr Val  
1025 1030 1035

Thr Glu Glu Leu Lys Glu Gly Ile Asp Ala Val Tyr Pro Ser Leu  
1040 1045 1050

Val Gly Thr Ala Asp Ser Lys Ala Glu Gly Ile Lys Asn Tyr Phe  
1055 1060 1065

Lys Leu Ser Phe Thr Leu Pro Glu Glu Gln Lys Ser Arg Thr Val  
1070 1075 1080

Gly Ser Glu Ala Pro Leu Lys Asp Val Ala Gln Ala Leu Ser Ser  
1085 1090 1095

Arg	Ala	Arg	Tyr	Glu	Leu	Phe	Thr	Glu	Lys	Glu	Thr	Ala	Asn	Pro
1100						1105					1110			
Ala	Phe	Asn	Gly	Glu	Val	Ile	Lys	Arg	Tyr	Lys	Glu	Leu	Met	Glu
1115						1120					1125			
His	Gly	Glu	Gly	Ile	Ala	Asp	Ile	Leu	Arg	Ser	Arg	Leu	Ala	Lys
1130						1135					1140			
Phe	Leu	Asn	Thr	Lys	Asp	Val	Gly	Lys	Arg	Phe	Ala	Gln	Gly	Thr
1145						1150					1155			
Glu	Ala	Asn	Arg	Trp	Val	Gly	Gly	Lys	Leu	Leu	Asn	Ile	Val	Glu
1160						1165					1170			
Gln	Asp	Gly	Asp	Thr	Phe	Lys	Tyr	Asn	Glu	Gln	Leu	Leu	Gln	Thr
1175						1180					1185			
Ala	Val	Leu	Ala	Gly	Leu	Gln	Trp	Arg	Leu	Thr	Ala	Thr	Ser	Asn
1190						1195					1200			
Thr	Ala	Ile	Lys	Asp	Ala	Lys	Asp	Val	Ala	Ala	Ile	Thr	Gly	Ile
1205						1210					1215			
Asp	Gln	Ala	Leu	Leu	Pro	Glu	Gly	Leu	Val	Glu	Gln	Phe	Asp	Thr
1220						1225					1230			
Gly	Met	Thr	Leu	Thr	Glu	Ala	Val	Ser	Ser	Leu	Ala	Gln	Lys	Ile
1235						1240					1245			
Glu	Ser	Tyr	Trp	Gly	Leu	Ser	Arg	Asn	Pro	Asn	Ala	Pro	Leu	Gly
1250						1255					1260			
Tyr	Thr	Lys	Gly	Ile	Pro	Thr	Ala	Met	Ala	Ala	Glu	Ile	Leu	Ala
1265						1270					1275			
Ala	Phe	Val	Glu	Ser	Thr	Asp	Val	Val	Glu	Asn	Ile	Val	Asp	Met
1280						1285					1290			
Ser	Glu	Ile	Asp	Pro	Asp	Asn	Lys	Lys	Thr	Ile	Gly	Leu	Tyr	Thr
1295						1300					1305			

Ile Thr	Glu Leu Asp Ser	Phe	Asp Pro Ile Asn Ser	Phe Pro Thr
1310		1315		1320
Ala Ile	Glu Glu Ala Val	Leu	Val Asn Pro Thr	Glu Lys Met Phe
1325		1330		1335
Phe Gly	Asp Asp Ile Pro	Pro	Val Ala Asn Thr	Gln Leu Arg Asn
1340		1345		1350
Pro Ala	Val Arg Asn Thr	Pro	Glu Gln Lys Ala	Ala Leu Lys Ala
1355		1360		1365
Glu Gln	Ala Thr Glu Phe	Tyr	Val His Thr Pro	Met Val Gln Phe
1370		1375		1380
Tyr Glu	Thr Leu Gly Lys	Asp	Arg Ile Leu Glu	Leu Met Gly Ala
1385		1390		1395
Gly Thr	Leu Asn Lys Glu	Leu	Leu Asn Asp Asn	His Ala Lys Ser
1400		1405		1410
Leu Glu	Gly Lys Asn Arg	Ser	Val Glu Asp Ser	Tyr Asn Gln Leu
1415		1420		1425
Phe Ser	Val Ile Glu Gln	Val	Arg Ala Gln Ser	Glu Asp Ile Ser
1430		1435		1440
Thr Val	Pro Ile His Tyr	Ala	Tyr Asn Met Thr	Arg Val Gly Arg
1445		1450		1455
Met Gln	Met Leu Gly Lys	Tyr	Asn Pro Gln Ser	Ala Lys Leu Val
1460		1465		1470
Arg Glu	Ala Ile Leu Pro	Thr	Lys Ala Thr Leu	Asp Leu Ser Asn
1475		1480		1485
Gln Asn	Asn Glu Asp Phe	Ser	Ala Phe Gln Leu	Gly Leu Ala Gln
1490		1495		1500
Ala Leu	Asp Ile Lys Val	His	Thr Met Thr Arg	Glu Val Met Ser
1505		1510		1515

Asp	Glu	Leu	Thr	Lys	Leu	Leu	Glu	Gly	Asn	Leu	Lys	Pro	Ala	Ile
1520						1525					1530			
Asp	Met	Met	Val	Glu	Phe	Asn	Thr	Thr	Gly	Ser	Leu	Pro	Glu	Asn
1535						1540					1545			
Ala	Val	Asp	Val	Leu	Asn	Thr	Ala	Leu	Gly	Asp	Arg	Lys	Ser	Phe
1550						1555					1560			
Val	Ala	Leu	Met	Ala	Leu	Met	Glu	Tyr	Ser	Arg	Tyr	Leu	Val	Ala
1565						1570					1575			
Glu	Asp	Lys	Ser	Ala	Phe	Val	Thr	Pro	Leu	Tyr	Val	Glu	Ala	Asp
1580						1585					1590			
Gly	Val	Thr	Asn	Gly	Pro	Ile	Asn	Ala	Met	Met	Leu	Met	Thr	Gly
1595						1600					1605			
Gly	Leu	Phe	Thr	Pro	Asp	Trp	Ile	Arg	Asn	Ile	Ala	Lys	Gly	Gly
1610						1615					1620			
Leu	Phe	Ile	Gly	Ser	Pro	Asn	Lys	Thr	Met	Asn	Glu	His	Arg	Ser
1625						1630					1635			
Thr	Ala	Asp	Asn	Asn	Asp	Leu	Tyr	Gln	Ala	Ser	Thr	Asn	Ala	Leu
1640						1645					1650			
Met	Glu	Ser	Leu	Gly	Lys	Leu	Arg	Ser	Asn	Tyr	Ala	Ser	Asn	Met
1655						1660					1665			
Pro	Ile	Gln	Ser	Gln	Ile	Asp	Ser	Leu	Leu	Ser	Leu	Met	Asp	Leu
1670						1675					1680			
Phe	Leu	Pro	Asp	Ile	Asn	Leu	Gly	Glu	Asn	Gly	Ala	Leu	Glu	Leu
1685						1690					1695			
Lys	Arg	Gly	Ile	Ala	Lys	Asn	Pro	Leu	Thr	Ile	Thr	Ile	Tyr	Gly
1700						1705					1710			
Ser	Gly	Ala	Arg	Gly	Ile	Ala	Gly	Lys	Leu	Val	Ser	Ser	Val	Thr
1715						1720					1725			

Asp	Ala	Ile	Tyr	Glu	Arg	Met	Ser	Asp	Val	Leu	Lys	Ala	Arg	Ala
1730						1735					1740			
Lys	Asp	Pro	Asn	Ile	Ser	Ala	Ala	Met	Ala	Met	Phe	Gly	Lys	Gln
1745						1750					1755			
Ala	Ala	Ser	Glu	Ala	His	Ala	Glu	Glu	Leu	Leu	Ala	Arg	Phe	Leu
1760						1765					1770			
Lys	Asp	Met	Glu	Thr	Leu	Thr	Ser	Thr	Val	Pro	Val	Lys	Arg	Lys
1775						1780					1785			
Gly	Val	Leu	Glu	Leu	Gln	Ser	Thr	Gly	Thr	Gly	Ala	Lys	Gly	Lys
1790						1795					1800			
Ile	Asn	Pro	Lys	Thr	Tyr	Thr	Ile	Lys	Gly	Glu	Gln	Leu	Lys	Ala
1805						1810					1815			
Leu	Gln	Glu	Asn	Met	Leu	His	Phe	Phe	Val	Glu	Pro	Leu	Arg	Asn
1820						1825					1830			
Gly	Ile	Thr	Gln	Thr	Val	Gly	Glu	Ser	Leu	Val	Tyr	Ser	Thr	Glu
1835						1840					1845			
Gln	Leu	Gln	Lys	Ala	Thr	Gln	Ile	Gln	Ser	Val	Val	Leu	Glu	Asp
1850						1855					1860			
Met	Phe	Lys	Gln	Arg	Val	Gln	Glu	Lys	Leu	Ala	Glu	Lys	Ala	Lys
1865						1870					1875			
Asp	Pro	Thr	Trp	Lys	Lys	Gly	Asp	Phe	Leu	Thr	Gln	Lys	Glu	Leu
1880						1885					1890			
Asn	Asp	Ile	Gln	Ala	Ser	Leu	Asn	Asn	Leu	Ala	Pro	Met	Ile	Glu
1895						1900					1905			
Thr	Gly	Ser	Gln	Thr	Phe	Tyr	Ile	Ala	Gly	Ser	Glu	Asn	Ala	Glu
1910						1915					1920			
Val	Ala	Asn	Gln	Val	Leu	Ala	Thr	Asn	Leu	Asp	Asp	Arg	Met	Arg
1925						1930					1935			

Val	Pro	Met	Ser	Ile	Tyr	Ala	Pro	Ala	Gln	Ala	Gly	Val	Ala	Gly
1940						1945					1950			
Ile	Pro	Phe	Met	Thr	Ile	Gly	Thr	Gly	Asp	Gly	Met	Met	Met	Gln
1955						1960					1965			
Thr	Leu	Ser	Thr	Met	Lys	Gly	Ala	Pro	Lys	Asn	Thr	Leu	Lys	Ile
1970						1975					1980			
Phe	Asp	Gly	Met	Asn	Ile	Gly	Leu	Asn	Asp	Ile	Thr	Asp	Ala	Ser
1985						1990					1995			
Arg	Lys	Ala	Asn	Glu	Ala	Val	Tyr	Thr	Ser	Trp	Gln	Gly	Asn	Pro
2000						2005					2010			
Ile	Lys	Asn	Val	Tyr	Glu	Ser	Tyr	Ala	Lys	Phe	Met	Lys	Asn	Val
2015						2020					2025			
Asp	Phe	Ser	Lys	Leu	Ser	Pro	Glu	Ala	Leu	Glu	Ala	Ile	Gly	Lys
2030						2035					2040			
Ser	Ala	Leu	Glu	Tyr	Asp	Gln	Arg	Glu	Asn	Ala	Thr	Val	Asp	Asp
2045						2050					2055			
Ile	Ala	Asn	Ala	Ala	Ser	Leu	Ile	Glu	Arg	Asn	Leu	Arg	Asn	Ile
2060						2065					2070			
Ala	Leu	Gly	Val	Asp	Ile	Arg	His	Lys	Val	Leu	Asp	Lys	Val	Asn
2075						2080					2085			
Leu	Ser	Ile	Asp	Gln	Met	Ala	Ala	Val	Gly	Ala	Pro	Tyr	Gln	Asn
2090						2095					2100			
Asn	Gly	Lys	Ile	Asp	Leu	Ser	Asn	Met	Thr	Pro	Glu	Gln	Gln	Ala
2105						2110					2115			
Asp	Glu	Leu	Asn	Lys	Leu	Phe	Arg	Glu	Glu	Leu	Glu	Ala	Arg	Lys
2120						2125					2130			
Gln	Lys	Val	Ala	Lys	Ala	Arg	Ala	Glu	Val	Lys	Glu	Glu	Thr	Val
2135						2140					2145			

Ser	Glu	Lys	Glu	Pro	Val	Asn	Pro	Asp	Phe	Gly	Met	Val	Gly	Arg
2150						2155					2160			
Glu	His	Lys	Ala	Ser	Gly	Val	Arg	Ile	Leu	Ser	Ala	Thr	Ala	Ile
2165						2170					2175			
Arg	Asn	Leu	Ala	Lys	Ile	Ser	Asn	Leu	Pro	Ser	Thr	Gln	Ala	Ala
2180						2185					2190			
Thr	Leu	Ala	Glu	Ile	Gln	Lys	Ser	Leu	Ala	Ala	Lys	Asp	Tyr	Lys
2195						2200					2205			
Ile	Ile	Tyr	Gly	Thr	Pro	Thr	Gln	Val	Ala	Glu	Tyr	Ala	Arg	Gln
2210						2215					2220			
Lys	Asn	Val	Thr	Glu	Leu	Thr	Ser	Gln	Glu	Met	Glu	Glu	Ala	Gln
2225						2230					2235			
Ala	Gly	Asn	Ile	Tyr	Gly	Trp	Thr	Asn	Phe	Asp	Asp	Lys	Thr	Ile
2240						2245					2250			
Tyr	Leu	Val	Ser	Pro	Ser	Met	Glu	Thr	Leu	Ile	His	Glu	Leu	Val
2255						2260					2265			
His	Ala	Ser	Thr	Phe	Glu	Glu	Val	Tyr	Ser	Phe	Tyr	Gln	Gly	Asn
2270						2275					2280			
Glu	Val	Ser	Pro	Thr	Ser	Lys	Gln	Ala	Ile	Glu	Asn	Leu	Glu	Gly
2285						2290					2295			
Leu	Met	Glu	Gln	Phe	Arg	Ser	Leu	Asp	Ile	Ser	Lys	Asp	Ser	Pro
2300						2305					2310			
Glu	Met	Arg	Glu	Ala	Tyr	Ala	Asp	Ala	Ile	Ala	Thr	Ile	Glu	Gly
2315						2320					2325			
His	Leu	Ser	Asn	Gly	Phe	Val	Asp	Pro	Ala	Ile	Ser	Lys	Ala	Ala
2330						2335					2340			
Ala	Leu	Asn	Glu	Phe	Met	Ala	Trp	Gly	Leu	Ala	Asn	Arg	Ala	Leu
2345						2350					2355			



Ala	Ala	Lys	Gln	Lys	Arg	Thr	Ser	Ser	Leu	Val	Gln	Met	Val	Lys
2360						2365					2370			
Asp	Val	Tyr	Gln	Ala	Ile	Lys	Lys	Leu	Ile	Trp	Gly	Arg	Lys	Gln
2375						2380					2385			
Ala	Pro	Ala	Leu	Gly	Glu	Asp	Met	Phe	Ser	Asn	Leu	Leu	Phe	Asn
2390						2395					2400			
Ser	Ala	Ile	Leu	Met	Arg	Ser	Gln	Pro	Thr	Thr	Gln	Ala	Val	Ala
2405						2410					2415			
Lys	Asp	Gly	Thr	Leu	Phe	His	Ser	Lys	Ala	Tyr	Gly	Asn	Asn	Glu
2420						2425					2430			
Arg	Leu	Ser	Gln	Leu	Asn	Gln	Thr	Phe	Asp	Lys	Leu	Val	Thr	Asp
2435						2440					2445			
Tyr	Leu	Arg	Thr	Asp	Pro	Val	Thr	Glu	Val	Glu	Arg	Arg	Gly	Asn
2450						2455					2460			
Val	Ala	Asn	Ala	Leu	Met	Ser	Ala	Thr	Arg	Leu	Val	Arg	Asp	Val
2465						2470					2475			
Gln	Ser	His	Gly	Phe	Asn	Met	Thr	Ala	Gln	Glu	Gln	Ser	Val	Phe
2480						2485					2490			
Gln	Met	Val	Thr	Ala	Ala	Leu	Ala	Thr	Glu	Ala	Ala	Ile	Asp	Pro
2495						2500					2505			
His	Ala	Met	Ala	Arg	Ala	Gln	Glu	Leu	Tyr	Thr	His	Val	Met	Lys
2510						2515					2520			
His	Leu	Thr	Val	Glu	His	Phe	Met	Ala	Asp	Pro	Asp	Ser	Thr	Asn
2525						2530					2535			
Pro	Ala	Asp	Arg	Tyr	Tyr	Ala	Gln	Gln	Lys	Tyr	Asp	Thr	Ile	Ser
2540						2545					2550			
Gly	Ala	Asn	Leu	Val	Glu	Val	Asp	Ala	Lys	Gly	Arg	Thr	Ser	Leu
2555						2560					2565			

Leu	Pro	Thr	Phe	Leu	Gly	Leu	Ala	Met	Val	Asn	Glu	Glu	Leu	Arg
2570						2575					2580			
Ser	Ile	Ile	Lys	Glu	Met	Pro	Val	Pro	Lys	Ala	Asp	Lys	Lys	Leu
2585						2590					2595			
Gly	Asn	Asp	Ile	Asp	Thr	Leu	Leu	Thr	Asn	Ala	Gly	Thr	Gln	Val
2600						2605					2610			
Met	Glu	Ser	Leu	Asn	Arg	Arg	Met	Ala	Gly	Asp	Gln	Lys	Ala	Thr
2615						2620					2625			
Asn	Val	Gln	Asp	Ser	Ile	Asp	Ala	Leu	Ser	Glu	Thr	Ile	Met	Ala
2630						2635					2640			
Ala	Ala	Leu	Lys	Arg	Glu	Ser	Phe	Tyr	Asp	Ala	Val	Ala	Thr	Pro
2645						2650					2655			
Thr	Gly	Asn	Phe	Ile	Asp	Arg	Ala	Asn	Gln	Tyr	Val	Thr	Asp	Ser
2660						2665					2670			
Ile	Glu	Arg	Leu	Ser	Glu	Thr	Val	Ile	Glu	Lys	Ala	Asp	Lys	Val
2675						2680					2685			
Ile	Ala	Asn	Pro	Ser	Asn	Ile	Ala	Ala	Lys	Gly	Val	Ala	His	Leu
2690						2695					2700			
Ala	Lys	Leu	Thr	Ala	Ala	Ile	Ala	Ser	Glu	Lys	Gln	Gly	Glu	Ile
2705						2710					2715			
Val	Ala	Gln	Gly	Val	Met	Thr	Ala	Met	Asn	Gln	Gly	Lys	Val	Trp
2720						2725					2730			
Gln	Pro	Phe	His	Asp	Leu	Val	Asn	Asp	Ile	Val	Gly	Arg	Thr	Lys
2735						2740					2745			
Thr	Asn	Ala	Asn	Val	Tyr	Asp	Leu	Ile	Lys	Leu	Val	Lys	Ser	Gln
2750						2755					2760			
Ile	Ser	Gln	Asp	Arg	Gln	Gln	Phe	Arg	Glu	His	Leu	Pro	Thr	Val
2765						2770					2775			

Ile	Ala	Gly	Lys	Phe	Ser	Arg	Lys	Leu	Thr	Asp	Thr	Glu	Trp	Ser
2780						2785					2790			
Ala	Met	His	Thr	Gly	Leu	Gly	Lys	Thr	Asp	Leu	Ala	Val	Leu	Arg
2795						2800					2805			
Glu	Thr	Met	Ser	Met	Ala	Glu	Ile	Arg	Asp	Leu	Leu	Ser	Ser	Ser
2810						2815					2820			
Lys	Lys	Val	Lys	Asp	Glu	Ile	Ser	Thr	Leu	Glu	Lys	Glu	Ile	Gln
2825						2830					2835			
Asn	Gln	Ala	Gly	Arg	Asn	Trp	Asn	Leu	Val	Gln	Lys	Lys	Ser	Lys
2840						2845					2850			
Gln	Leu	Ala	Gln	Tyr	Met	Ile	Met	Gly	Glu	Val	Gly	Asn	Asn	Leu
2855						2860					2865			
Leu	Arg	Asn	Ala	His	Ala	Ile	Ser	Arg	Leu	Leu	Gly	Glu	Arg	Ile
2870						2875					2880			
Thr	Asn	Gly	Pro	Val	Ala	Asp	Val	Ala	Ala	Ile	Asp	Lys	Leu	Ile
2885						2890					2895			
Thr	Leu	Tyr	Ser	Leu	Glu	Leu	Met	Asn	Lys	Ser	Asp	Arg	Asp	Leu
2900						2905					2910			
Leu	Ser	Glu	Leu	Ala	Gln	Ser	Glu	Val	Glu	Gly	Met	Glu	Phe	Ser
2915						2920					2925			
Ile	Ala	Tyr	Met	Val	Gly	Gln	Arg	Thr	Glu	Glu	Met	Arg	Lys	Ala
2930						2935					2940			
Lys	Gly	Asp	Asn	Arg	Thr	Leu	Leu	Asn	His	Phe	Lys	Gly	Tyr	Ile
2945						2950					2955			
Pro	Val	Glu	Asn	Gln	Gln	Gly	Val	Asn	Leu	Ile	Ile	Ala	Asp	Asp
2960						2965					2970			
Lys	Glu	Phe	Ala	Lys	Leu	Asn	Ser	Gln	Ser	Phe	Thr	Arg	Ile	Gly
2975						2980					2985			

Thr	Tyr	Gln	Gly	Ser	Thr	Gly	Phe	Arg	Thr	Gly	Ser	Lys	Gly	Tyr
2990						2995					3000			
Tyr	Phe	Ser	Pro	Val	Ala	Ala	Arg	Ala	Pro	Tyr	Ser	Gln	Gly	Ile
3005						3010					3015			
Leu	Gln	Asn	Val	Arg	Asn	Thr	Ala	Gly	Gly	Val	Asp	Ile	Gly	Thr
3020						3025					3030			
Gly	Phe	Thr	Leu	Gly	Thr	Met	Val	Ala	Gly	Arg	Ile	Thr	Asp	Lys
3035						3040					3045			
Pro	Thr	Val	Glu	Arg	Ile	Thr	Lys	Ala	Leu	Ala	Lys	Gly	Glu	Arg
3050						3055					3060			
Gly	Arg	Glu	Pro	Leu	Met	Pro	Ile	Tyr	Asn	Ser	Lys	Gly	Gln	Val
3065						3070					3075			
Val	Ala	Tyr	Glu	Gln	Ser	Val	Asp	Pro	Asn	Met	Leu	Lys	His	Leu
3080						3085					3090			
Asn	Gln	Asp	Asn	His	Phe	Ala	Lys	Met	Val	Gly	Val	Trp	Arg	Gly
3095						3100					3105			
Arg	Gln	Val	Glu	Glu	Ala	Lys	Ala	Gln	Arg	Phe	Asn	Asp	Ile	Leu
3110						3115					3120			
Ile	Glu	Gln	Leu	His	Ala	Met	Tyr	Glu	Lys	Asp	Ile	Lys	Asp	Ser
3125						3130					3135			
Ser	Ala	Asn	Lys	Ser	Gln	Tyr	Val	Asn	Leu	Leu	Gly	Lys	Ile	Asp
3140						3145					3150			
Asp	Pro	Val	Leu	Ala	Asp	Ala	Ile	Asn	Leu	Met	Asn	Ile	Glu	Thr
3155						3160					3165			
Arg	His	Lys	Ala	Glu	Glu	Leu	Phe	Gly	Lys	Asp	Glu	Leu	Trp	Val
3170						3175					3180			
Arg	Arg	Asp	Met	Leu	Asn	Asp	Ala	Leu	Gly	Tyr	Arg	Ala	Ala	Ser
3185						3190					3195			

Ile Gly 3200	Asp Val Trp Thr 3205	Gly Asn Ser Arg Trp Ser 3210	Pro Ser Thr
Leu Asp 3215	Thr Val Lys Lys Met 3220	Phe Leu Gly Ala Phe 3225	Gly Asn Lys
Ala Tyr 3230	His Val Val Met Asn 3235	Ala Glu Asn Thr Ile 3240	Gln Asn Leu
Val Lys 3245	Asp Ala Lys Thr Val 3250	Ile Val Val Lys Ser 3255	Val Val Val
Pro Ala 3260	Val Asn Phe Leu Ala 3265	Asn Ile Tyr Gln Met 3270	Ile Gly Arg
Gly Val 3275	Pro Val Lys Asp Ile 3280	Ala Val Asn Ile Pro 3285	Arg Lys Thr
Ser Glu 3290	Ile Asn Gln Tyr Ile 3295	Lys Ser Arg Leu Arg 3300	Gln Ile Asp
Ala Glu 3305	Ala Glu Leu Arg Ala 3310	Ala Glu Gly Asn Pro 3315	Asn Leu Val
Arg Lys 3320	Leu Lys Thr Glu Ile 3325	Gln Ser Ile Thr Asp 3330	Ser His Arg
Arg Met 3335	Ser Ile Trp Pro Leu 3340	Ile Glu Ala Gly Glu 3345	Phe Ser Ser
Ile Ala 3350	Asp Ala Gly Ile Ser 3355	Arg Asp Asp Leu Leu 3360	Val Ala Glu
Gly Lys 3365	Ile His Glu Tyr Met 3370	Glu Lys Leu Ala Asn 3375	Lys Leu Pro
Glu Lys 3380	Val Arg Asn Ala Gly 3385	Arg Tyr Ala Leu Ile 3390	Ala Lys Asp
Thr Ala 3395	Leu Phe Gln Gly Ile 3400	Gln Lys Thr Val Glu 3405	Tyr Ser Asp

Phe Ile Ala Lys Ala Ile Ile Tyr Asp Asp Leu Val Lys Arg Lys  
3410 3415 3420

Lys Lys Ser Ser Ser Glu Ala Leu Gly Gln Val Thr Glu Glu Phe  
3425 3430 3435

Ile Asn Tyr Asp Arg Leu Pro Gly Arg Phe Arg Gly Tyr Met Glu  
3440 3445 3450

Ser Met Gly Leu Met Trp Phe Tyr Asn Phe Lys Ile Arg Ser Ile  
3455 3460 3465

Lys Val Ala Met Ser Met Ile Arg Asn Asn Pro Val His Ser Leu  
3470 3475 3480

Ile Ala Thr Val Val Pro Ala Pro Thr Met Phe Gly Asn Val Gly  
3485 3490 3495

Leu Pro Ile Gln Asp Asn Met Leu Thr Met Leu Ala Glu Gly Arg  
3500 3505 3510

Leu Asp Tyr Ser Leu Gly Phe Gly Gln Gly Leu Arg Ala Pro Thr  
3515 3520 3525

Leu Asn Pro Trp Phe Asn Leu Thr His  
3530 3535

<210> 16  
<211> 32  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 16  
ggcattactt catccaaaag aagcggagct tc

32

<210> 17  
<211> 37  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 17  
 ggccatccat tacttcatcc aaaagaagcg gagcttc 37

<210> 18  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic

<400> 18  
 ggatccaaaa gaagcggagc ttc 23

<210> 19  
 <211> 32  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic

<400> 19  
 ggcattactt catccaaaag aagctgagct tc 32

<210> 20  
 <211> 29  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic

<400> 20  
 ggcattactt catccaaaag aagcggagc 29

<210> 21  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic

<400> 21  
 ggaggctcct cgagttctcc tttt 24

<210> 22  
 <211> 25  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Synthetic  
  
 <400> 22  
 ggactacctt cgggtagtcc ttttt 25

<210> 23  
 <211> 33  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Synthetic  
  
 <400> 23  
 agaagggggc tactaagccc tcttcttatt ttt 33

<210> 24  
 <211> 19  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Synthetic  
  
 <400> 24  
 aagctgctcc gcagctttt 19

<210> 25  
 <211> 35  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Synthetic  
  
 <400> 25  
 aaggctatcc ctacgggggt agcctttatt ttttt 35

<210> 26  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Synthetic



<400> 26  
gccctccttg tgagggttt tt 22

<210> 27  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 27  
tccataagtt gcgaagcaac 20

<210> 28  
<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 28  
tccaaaagaa gcggagcttc tt 22

<210> 29  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 29  
accaaaagct gcggagcagc 20

<210> 30  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 30  
tccaaaagaa gcggagcttc 20

<210> 31  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 31  
atccaaaaga agcggagctt c

21

<210> 32  
<211> 19  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 32  
atccaaaaga agcggagct

19

<210> 33  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 33  
atccaaaaga agcggagc

18

<210> 34  
<211> 17  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 34  
atccaaaaga agcggag

17

<210> 35  
<211> 16  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 35  
atccaaaaga agcgga 16

<210> 36  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 36  
atccaaaaga agcggagctt ctt 23

<210> 37  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 37  
atccaaaaga agcggagctt cttt 24

<210> 38  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 38  
atccaaaaga agcggagctt ctttt 25

<210> 39  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 39  
atccaaaaga agcggagctt cttttg 26

<210> 40  
<211> 14  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 40

Arg Gly Ile Ala Lys Asn Pro Leu Thr Ile Thr Ile Tyr Gly  
1 5 10

<210> 41  
<211> 14  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic

<400> 41

Arg Gly Ile Ala Ala Asn Pro Leu Thr Ile Thr Ile Phe Gly  
1 5 10